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WORLD MARITIME UNIVERSITY

Malmö, Sweden

A SYNOPSIS OF THE SEAFARERS' WELLBEING:

Qualitative research based on data derived from seafarers and maritime stakeholders

By

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Georgia

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the reward of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS

(MARITIME SAFETY AND ENVIRONMENTAL ADMINISTRATION)

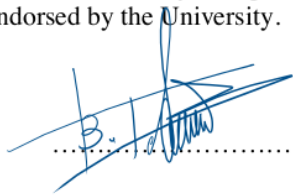
2020

Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views and are not necessarily endorsed by the University.

(Signature):

A handwritten signature in blue ink, appearing to be 'B. I. ...', is written over a dotted line.

(Date):

21 September 2020

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Last, but not least I dedicate this work 'A synopsis of the seafarers' wellbeing' to every seafarer from around the world of every rank and age from those who have just begun their journey up to those who have already accomplished their time at sea. It is a brave, courageous and difficult profession that is not meant to be for everyone. Seafarers' importance is huge for the world, but their merit is not fully appreciated. The maritime industry has successfully and safely been operating on the expense of the seafarers' wellbeing, which must change, because seafarers are no different to any other human being deserving healthy physical, mental and social wellbeing.

Abstract

Title of Dissertation: **A SYNOPSIS OF THE SEAFARERS' WELLBEING.
Qualitative research based on data derived from seafarers
and maritime stakeholders**

Degree: **Master of Science in Maritime Affairs**

This research aims to provide insight into seafarers' wellbeing. It explores the main factors contributing to seafarers' deteriorated wellbeing. The level of influence of those factors on seafarers' wellbeing is further investigated. Moreover, the effectiveness of main regulatory instruments on health and safety to address seafarers' wellbeing is analysed and discussed.

Qualitative methodology based on semi-structured interviews and content analysis was applied. Twenty-six active seafarers of different nationalities, one pilot and 11 influential maritime stakeholders of the industry were interviewed.

The study reveals excessive workload and lack of sleep (as a result of reduced manning) as major contributors to fatigue further causing deteriorated seafarers' wellbeing. Other such main contributing factors include lack of shore leave, unavailability of the recreational facilities, and stress/anxiety. A literature review has revealed that a sound assessment of wellbeing, whether in or outside workplace, requires consideration of its physical, mental and social dimensions. The study indicates that existing working and living conditions onboard ships provided by shipowners are not in full compliance with such dimensions.

Results also indicate that the regulatory instrument MLC 2006 sets out basic seafarers' rights but does not fully addresses their wellbeing. The evidence of adjustments to reports of work and rest hours reveals that the STCW 2010 regulation governing fatigue, is not effective and reports mainly serve as a tool for ships' successful inspection.

The research further shows that the awareness level of the concept of wellbeing is not consistent between seafarers and maritime stakeholders. The industry seems to be more aware of the main issues related to wellbeing than seafarers are. Moreover, the industry benefits from the seafarers' submissiveness, which leads to regulations remaining unchanged.

The study finally concludes that seafarers' wellbeing is unlikely to improve unless awareness of the concept of wellbeing is raised and all necessary issues are well considered in the next amendments of the regulatory instruments.

KEYWORDS: Seafarers wellbeing, Maritime regulatory framework, MLC 2006, Manning and workload, Fatigue, Practice of adjustments.

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List of Abbreviations

AB	Able Seaman
FOC	Flag of Convenience
GT	Grounded Theory
GTQA	Grounded Theory Qualitative Analysis
ILO	International Labour Organization
ICS	International Chamber of Shipping
IMO	International Maritime Organization
ISPC	International Ship and Port Facility Security Code
LPG	Liquefied Petroleum Gas
MLC	Maritime Labour Convention
MSC	Maritime Safety Committee
NFS	Nuclear Free Ship
NGO	Non-Governmental Organization
OSH	Occupational Safety and Health
PSC	Port State Control
STCW	International Convention on Standards of Training Certification and Watchkeeping for Seafarers
USA	United States of America
WHO	World Health Organization
WMU	World Maritime University

Chapter 1 – Introduction

1.1 Background

The fact that seafaring is the most challenging, unpredictable and unique occupation has been recognized even in ancient times. As per Anacharsis, a 6th century B.C Scythian philosopher “there are three sorts of people, those who are alive, those who are dead and those who are at sea”, which most probably means that it is impossible to completely determine the fate of a person who is at sea until he/she returns home alive or does not.

In a contemporary world some 26 centuries later, the maritime industry is still well known for its complexity and diversity. Ships are seen as an isolated and confined environment, a safety-critical system with a fusion of maritime specific stressors (McVeigh et al., 2017).

The Maritime Joint Work Environment in Sweden (MJWE SAN, 2020)¹ describes the working environment onboard ships not only by factors such as ergonomics, vibration, noise, shift work, and long stay onboard but also by psychosocial elements which have a major influence on it, such as leadership and communication skills, healthy nutrition, exercise regime, shore leave, shift work and others (MJWE SAN, 2020). All

¹ Sjöfartens Arbetarskyddsnämnd, the Swedish Maritime Joint Work Environment Council (SAN) promotes maritime work environment management. Full information can be found at: <https://san-nytt.se/eng/>

these elements have a direct impact on seafarers' wellbeing and can have an adverse effect on a healthy workplace.

Life onboard has been described as an institution, isolated from normal social life (Aubert, 1982). So, a psychosocial working environment where seafarers spend most of their time is important to them as they are in close proximity to one another. Such a unique psychosocial working environment has a significant influence on their wellbeing, because it is where they interact and make all work-related decisions. Moreover, the only place where they can have privacy is their cabin (Mårtensson, 2006).

Another characteristic feature of seafaring as an occupation is that the working and living area is combined in one space. Seafarers stay in close quarters with the same individuals and perform the same job every single day at the same place for weeks and in majority of times for months. Consequently, all the stressors causing reduction of their wellbeing can be of a chronic nature. Such chronic stressors are those with long lasting events that put individuals in a highly stressful environment (Hepburn et al. 1997).

Optimal workload and sufficient interaction in the workplace as well as good communication with colleagues, enough rest and sleep all are crucially important for seafarers' wellbeing (Mallam et al., 2015).

Organizational support, a healthy relationship between management and employees, and engaged leadership among many other factors constitute a safe environment (Törner, 2010). Thus, based on the nature of the working environment, seafarers' wellbeing is of utmost importance to support their physical, mental and social health and to support general safety for the workplace environment.

The seafaring occupation is radically different from those on land in the sense that ships as mobile means of transport are in almost constant motion traveling from country to country around the world. The type of ship and the nature of the work performed add additional complexity to the workplace compared to those on land.

Long stays onboard away from families and friends, excessive workload, high sense of responsibility, reduced direct access to medical assistance, lack of police interference in case of criminal acts or lack of quick repatriation in case of an emergency and many other deprived services make shipboard personnel in high demand with comparably high salaries (Nielsen et al., 2013).

The workplace onboard ships has been developed with well-defined duties and responsibilities, where the roles of the superiors and inferiors have been assigned with high accuracy. Basic tasks have remained consistent for all ranks, but new tasks appear constantly that must be adapted to and performed quickly and efficiently. New tasks come with new risks which must also be identified and prevented with all possible measures within a short time (Bhattacharya & Tang, 2013). Such kinds of demands and work conditions lead to physical and mental conditions in seafarers which significantly reduce their wellbeing.

Contemporary shipping is equipped with multinational crews employed by crewing agents and the mix of cultures may vary on every voyage. Although it is logical that all crew members should have the same employment conditions onboard the same ship, the reality is far from this. Multinationalism has itself caused various employment conditions. European crew members' voyage duration is relatively shorter than those from Asia which is the major crewing supplier nowadays, and it is interesting to note that northern European officers' salaries are double compared to their Asian counterparts (Kahveci, 1999).

The responsibility for establishing a safe workplace onboard which must contribute to the positive wellbeing of the seafarers is not only laid upon shipboard crew but on ship owners as well. It is their primary duty to create and further control such procedures based on international standards which would facilitate ships' captains and crews to follow these rules and regulations. For this reason, shipowners delegate certain tasks to ships' captains who should further promote wellbeing at a workplace onboard among crew members. However, shipowners still remain in charge of making sure that the shipboard working atmosphere is safe through conducting visits and inspections (MJWE SAN, 2020).

Seafarers employment is based on their contracts as specified by the Maritime Labour Convention 2006 (MLC 2006), which also requires their medical examination prior to joining the ships to measure their physical fitness for employment. There is no such system which evaluates seafarers' wellbeing in all its physical, mental and social dimensions during their employment period. The questions such as whether a given seafarer's wellbeing is monitored and how much they remain healthy still remain open.

1.2 Problem statement

Social exclusion, stress and anxiety, continuous social proximity, multiculturalism, long employment contracts and lack of shore leave, ships' fast turnaround, shift work are combined paradoxes that lead to the creation of a unique and distinct environment onboard ships for approximately 1.6 million working seafarers (ICS, 2020)². Due to technological advancements, a revolution in communication technologies and substantial social changes to seafarers' wellbeing is expected to be improved in all its dimensions. However, seafaring is still associated with multitude of mental, psychosocial and physical stressors caused by various elements such as authoritative leadership, lack of exercise, bad nutrition, shift work, high sense of responsibility, heavy physical and mental workload, separation from families, limited recreational opportunities, sleep deprivation, fatigue, anxiety, multi-nationalism and also environmental stressors such as adverse weather effect, noise and vibration (McVeigh et al., 2017).

Although the maritime industry is governed by national and international rules and regulations, there are few instruments and policies that address and facilitate evaluation of seafarers' wellbeing. Almost none of them refer to the term "psychosocial working and living environment" or define what constitutes seafarers' wellbeing in such an environment (Paraíso & Lundh, 2016).

² ICS – The International Chamber of Shipping is the world's principal shipping organisation, representing around 80% of the world's merchant tonnage, through membership by national shipowners' associations. Full information can be found at: <https://www.ics-shipping.org/>

The industry does recognize issues related with seafarers' wellbeing through various research as described in chapter 2.2 and in most cases these issues are addressed as fatigue or mental health. As revealed by research results, seafarers' wellbeing is found to be of considerable concern more to charity organizations, employer associations and trade unions and less to employers' companies (Sampson & Ellis, 2019).

It is a problem that the maritime industry lacks the appropriate measures and policies that would give complete support to seafarers' physical, mental and social wellbeing and raise awareness of it internationally.

1.3 Research aim and objectives

The aim of the study is to investigate what contributes to the deterioration of seafarers' wellbeing at its three dimensions, physical, mental and social, in order to further enhance awareness and promote their improvement.

The research comprises four objectives:

- To conduct a descriptive theoretical analysis of the general concept of wellbeing and its dimensions and to overview regulatory instruments and existing research on the subject in the industry.
- To collect data through semi structured interviews from seafarers and various maritime stakeholders with interests to seafaring.
- To reveal factors contributing to adverse effects on wellbeing through analysing the data derived from semi structured interviews.
- To provide recommendations based on the research findings as to what changes must be made to promote and improve seafarers' wellbeing better and reduce fatigue to a tolerable level as in other modes of transport.

1.4 Research questions

The study aims to find answers to the following questions:

1. What is the general awareness of wellbeing in the maritime industry and what significance is given to it by seafarers and various maritime stakeholders?
2. What are the main contributing factors leading to deterioration of seafarers' physical, mental and social wellbeing and how do they affect them?
3. What is the awareness of the existing regulatory instruments addressing seafarers' wellbeing and how effectively they function?
4. What improvements can be made to enhance seafarers' wellbeing physically, mentally and socially onboard ships?

1.5 Research limitation

The study examines seafarers' wellbeing with respect to the merchant fleet only, including ship types such as oil / chemical tankers, liquid petroleum gas carriers (LPG), bulk carriers, container vessels, passenger ships, NFS ships, expedition vessels, car carriers, multipurpose ships, dredgers, ice breakers and tugs. The research does not include fisheries, leisure crafts or naval ships.

1.6 Overview of the research

The study consists of three parts with associated chapters.

Part one - The introductory part of the dissertation gives a good understanding of seafaring in general and its associated challenges. It reveals the factors contributing to the reduction and lack of awareness of seafarers' wellbeing. The chapter further sets the main questions to be answered through the research findings.

The literature review in Chapter 2 covers the following subjects: the notion of wellbeing with all of its dimensions; its effects in the workplace, and fatigue as one of

the aspects of wellbeing. Further discussion on existing major research from various organizations and institutions on seafarers' wellbeing is provided along with an analysis of regulatory instruments in the maritime industry.

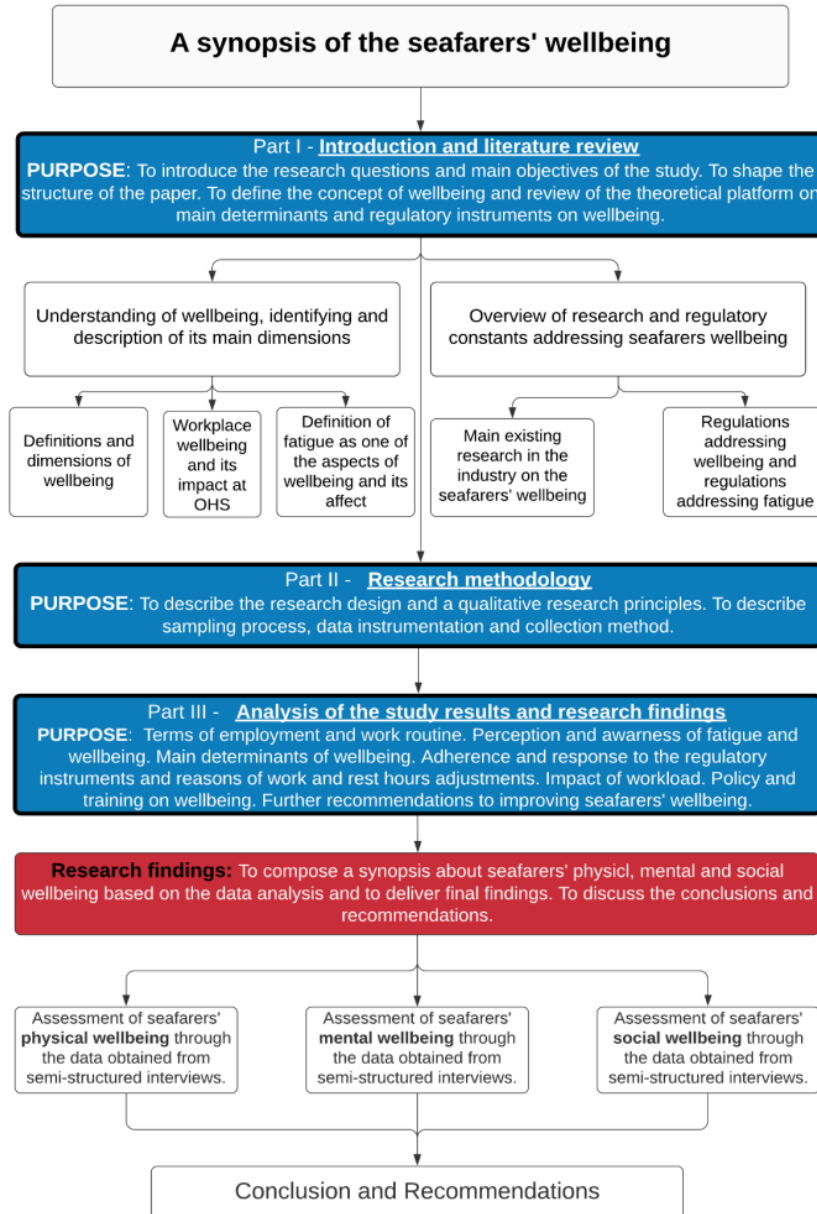
Part two – The research methodology in chapter 3 describes a qualitative research design, sampling process, data analysis and collection method.

Part three deals with the analysis of study results, research findings, discussion, and conclusions based on the data derived from the interviews addressing all main factors affecting seafarers' wellbeing.

1.7 Structure

Figure 1

Structure of the dissertation



Chapter 2 - Literature review

This chapter provides a literature review on the conceptual definition of wellbeing and its dimensions with emphasis on its significance in the workplace and its impact on occupational health and safety. Fatigue is further discussed as one of the aspects of wellbeing. The main research in the industry is discussed along with the regulations addressing wellbeing and fatigue.

2.1 Definition and dimensions of wellbeing

Wellbeing has a diverse context, but despite this there is a consistency of qualities and dimensions to it. Thus, a correct definition and selection of dimensions is essential for the scope of this work to facilitate the process of overviewing seafarers' wellbeing.

The two dimensions of wellbeing must be discussed to facilitate an understanding of the concept of wellbeing, subjective or hedonic and objective or eudemonistic (Elliot, 2016).

The subjective describes wellbeing as being happy or avoiding pain based on the belief that life is satisfying in general (David et al. 2014). But such a dimension becomes inappropriate when we face the question "what determines life as satisfactory?" (Kahneman et al., 2003).

The objective or eudemonistic dimension depicts a model of wellbeing that

interconnects the physical, psychological, and social aspects of life but emphasizes their importance separately and not as one. The word eudemonistic is derived from the Greek word eudaimonia and means fulfilling life (Williams, 2011). Such a model of wellbeing is defined through human needs and rights considering aspects such as physical health, sufficient food, adequate living conditions and safety. It is usually measured through collecting reports from individuals (Crimson, 2007).

The World Health Organization's (WHO) constitution of 1948 defines health as: 'A state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity' (WHO, 1948). The WHO's definition equates health to wellbeing, which seems to be an obsolete understanding because there are some differences between these two. From the biomedical point of view health is assessed based on a clinical diagnosis. For example if a person is diagnosed with missing some parts of the body he/she may not be viewed as complete in terms of health, but at the same time the same person can be fit physically, mentally and socially with positive wellbeing (Misselbrook, 2014).

Wellbeing promotes a positive state and its definition tends to be based on functioning well physically, mentally or socially. It remains separate from the concept of health in that its presence or absence cannot be diagnosed, but at the same time these two are strongly interrelated (Crimson, 2007).

2.1.1 Measurement of wellbeing

There are number of comprehensive assessment methods used to assess the main dimensions that lead to measuring wellbeing. These dimensions are categorized as the physical, mental, and social and a reduction in the quality of any of these dimensions will lead to failure to maintain one's wellbeing (Rachele et al., 2013).

The broader definition of the dimensions of wellbeing are perceived as:

- Physical or when an individual is facing physiological stress and in case the body fails, then the damage might grow into illness (McEwen, 2003).

- Mental, which is seen as a capacity to handle and recover from strong psychological pressure (Antonovsky, 1979).
- Social or the ability of an individual to take part in social activities as well as to fulfil work obligations despite social and environmental challenges (Huber et al., 2011).

To handle the challenges in various circumstances and to maintain optimal wellbeing a balance among of all these dimensions should be attained. This means that the measuring tool of one's wellbeing is more than a basic understanding of health but rather an optimal state across these dimensions (Renger et al., 2000).

2.1.2 Workplace wellbeing

The definition of workplace wellbeing includes more than just the physical work environment, which used to be the only focus of a healthy workplace in the past. The modern understanding includes psychosocial aspects, work organization and workplace culture (Burton, 2010).

Considering this point of view, WHO has defined workplace wellbeing in the following manner:³

“A healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of all workers and the sustainability of the workplace by considering the following, based on identified needs:

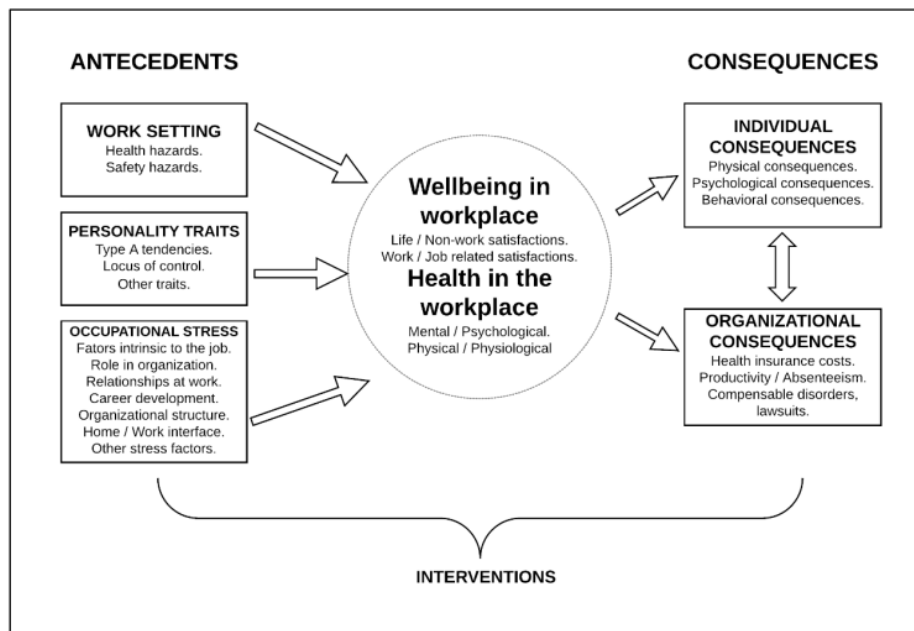
- *health and safety concerns in the physical work environment;*
- *health, safety and well-being concerns in the psychosocial work environment including organization of work and workplace culture;*
- *personal health resources in the workplace;*
- *ways of participating in the community to improve the health of workers, their families and other members of the community”* (Burton, 2010).

³ WHO has implemented healthy workplace and framework model, its background and supporting literature practice, which provides a scientific basis for a healthy workplace framework.

This definition has been agreed among other global agencies including the International Labour Organization (ILO)⁴. Its primary message is that employee wellbeing with its main dimensions is of paramount importance in the workplace. Figure 2 depicts the idea of workplace wellbeing, with work setting, personality traits and occupational stress as general sets of antecedent factors contributing to the final consequences, both individual and organizational (Danna & Griffin, 1999).

Figure 2

A framework of wellbeing in the workplace (Danna & Griffin, 1999)



⁴ ILO has adopted same notion in workplace promotion and wellbeing program:
https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/workplace-health-promotion-and-well-being/WCMS_118396/lang-en/index.htm

With a correct intervention at both individual and organizational levels workplace wellbeing can be significantly improved preventing adverse consequences (Simone, 2014).

2.1.3 Impact of wellbeing at Occupational safety and health

Occupational safety and health (OSH) at the workplace and workplace wellbeing seem to be conceptually similar. They are strongly related, as much as the notions of wellbeing and health, yet different, serving to complement each other (Burton, 2010). ILO jointly with the WHO define OSH as “the anticipation, recognition, evaluation and control of hazards arising in, or from the workplace that could impair the safety, health and well-being of workers”.⁵

So, it is a form of capacity of the organization to create such a working environment where all possible hazards and risks threatening the wellbeing of the employee would be recognized and eliminated through the application of preventive and protective measures (Price & Hooijberg, 1992).

Workplace wellbeing and OSH in the workplace can be distinguished in the manner that the state of the first is determined from an employee’s condition and can have a very individual character, whilst the second must be created and provided by an employer through various safety tools and parameters (Gunningham, 2008).

One of the most important principles of OSH is workers’ rights which is based on the United Nations Universal Declaration of Human Rights, 1948: “Everyone has the right to work, to free choice of employment, to just and favorable conditions of work.”⁶ It means that the work environment must be safe and healthy, and conditions of work must be in full compliance with the workers’ wellbeing and dignity (ILO, 1981).⁷

From these discussions it can be stated that the impact of employee’s wellbeing at the OSH can be rather significant, either affecting adversely or further promulgating the safety culture.

⁵ ILO (2016-2020) - Occupational safety and health policy document, P.17.

⁶ UN (1948) - United Nations universal declaration of human rights, article 23.

⁷ ILO (1981) - Occupational health and safety convention.

2.1.4 Fatigue and wellbeing

The word fatigue is derived from the Latin word 'fatigare', which means 'tire out'. In contemporary English, the Oxford dictionary gives various definitions, of which the most notable are: "Extreme tiredness resulting from mental or physical exertion or illness" and "a lessening in one's response to or enthusiasm for something, caused by overexposure".

Fatigue can emerge due to various reasons such as excessive physical or mental labor, insufficient sleep causing disruptive circadian rhythm, stress and anxiety. Monotonous cognitive activities or jobs carried out reluctantly can also support the fatigue effect (Fatigue, 2017).

The root causes leading to fatigue have intensified in parallel with the development of modern industrial society. This can be explained by high job demands, inconsistent work schedules, variable duty periods, frequent time zone transitions, nighttime work, and or a combination of these factors (Lieberman, 2011).

Fatigue is characterized by either an acute or chronic nature. The first emerges from short term mental or physical exhaustion and its effect is usually minor. The second is more serious in that its influence can be constant and can last longer than six months (Fatigue, 2017).

Chronic fatigue syndrome can be increasingly dangerous to wellbeing. It has dimensions of impaired memory and concentration, mood alterations and most importantly insomnia. The last often results from frequently interrupted or insufficient sleep during a 24h cycle (Greenberg, 2002).

2.1.5 How much sleep do we need?

Sleep is an inevitable physiological state and its duration is a major determinant of a healthy life. Fatigue as described in the previous chapter can be one of the root causes of deteriorated sleep patterns, but at the same time sleep itself plays a major role in recovering from fatigue.⁸

The National Sleep Foundation has conducted world class research to have varying perspectives on answering the question how much sleep do we need? The results offer recommended hours of sleep for all ages, which will support health and wellbeing for normal functionality, as well as recommended and not recommended hours⁹ (Hirshkowitz et al., 2015).

Table 1

National Sleep Foundation table for sleep durations (Hirshkowitz et al., 2015)

Age	Recommended, h	May be appropriate, h	Not recommended, h
Young adults 18-25 y	7 to 9	6 10 to 11	Less than 6 More than 11
Adults 26-64 y	7 to 9	6 10	Less than 6 More than 10
Older adults ≥ 65 y	7 to 8	5 to 6 9	Less than 5 More than 9

As it is exposed in Table 1, the recommended minimum hours of sleep for all ages is 7h, where 6h may be appropriate but never less than 5h. Some individuals may sleep more or less than recommended hours and it can be acceptable with no adverse effect. It is not the case with sleep duration that is far outside the recommended range because it is clinically proved that sleep deprivation leads to serious compromise to health and wellbeing (Williamson et al., 2011).

2.2 Regulatory constants affecting seafarers' wellbeing

⁸ WHO (2004). Technical meeting on sleep and health.

⁹ For the scope of this research only young adults, adults and older adults have been selected as depicted in fig 2.

The maritime industry belongs to the category of the most regulated industries in the world and it would be fair enough to note that all regulatory conventions are based on major accidents. However, no such accident has ever happened related to the human element which would trigger legislation on wellbeing (Graham, 2009).

The instruments which primarily affect seafarers' wellbeing are provided by ILO and IMO in the form of international conventional regulations and guidelines. Such instruments do concern wellbeing and its dimensions but also address fatigue separately as a main aspect undermining seafarers' health onboard.

2.2.1 Regulations addressing wellbeing

For centuries, there was no common term available in the industry that addressed wellbeing and seamen were usually underfed, underpaid and overworked and considered workmen beyond the usual resources of the law. Only food, clothing, accommodation and medical facilities were deemed to be the main and sufficient attributes for seafarers' wellbeing (Walters & Bailey, 2013).

It was the adoption of the Maritime Labour Convention 2006 (MLC 2006) which brought some light onto seafarers' rights and welfare. The Convention captures a wide concept of seafarers' wellbeing through providing regulations related to various areas of the working and living environment, thus vastly improving seafarers' lives onboard the ships (Exarchopoulos et al., 2018).

As seafarers' working and living environments are combined in one space, the standards of the facilities and furnishing of accommodation have a direct impact on their stress and fatigue (Ellis, 2009). Such an effect has been regulated by provisions for safe and decent accommodation and recreational facilities with a clear emphasis on:

“the size of rooms and other accommodation spaces; heating and ventilation; noise and vibration and other ambient factors; sanitary facilities; lighting; and hospital accommodation” (MLC 2006, Reg 3.1.4).

It is notable to mention that as per guideline B3.1.11, 'Recreational facilities, mail and ship visit arrangements', consideration should also be given to sports equipment including exercise equipment, table games and deck games and where possible to facilities for swimming.

Access to good quality of food and drinking water is addressed under regulation 3.2 and the importance of availability of shore-based welfare facilities is provided in Regulation 4.4 – Access to shore-based welfare facilities. Moreover, the member states are obliged to have developed in their port territories meeting areas for seafarers' recreational, educational and sports purposes (Guideline B4.4.2 – Welfare facilities and services in ports).

To ensure that seafarers have adequate leave, MLC 2006 provides Regulation 2.4, Entitlement to leave, where paragraph 2 states:

“Seafarers shall be granted shore leave to benefit their health and well-being and consistent with the operational requirements of their positions”.

Hence, it is the obligation of the competent authority to determine calculation of the length of service for each seafarer along with the annual leave and pay entitlement.

Shore leave appears to be another important determinant to declined wellbeing conditions among seafarers. With a reduced crew number onboard ships, it has become more difficult to have sufficient and frequent shore leave, causing seafarers' increased workload, (Kahveci, 1999). Despite such an existing issue, there is no regulation provided by MLC 2006 or any other convention which would obligate shipping companies to implement a policy addressing seafarers' shore leave in ports.

However, importance of repatriation has been taken into the consideration by MLC 2006 regulation 2.5, which states that:

“Each Member shall ensure that seafarers on ships that fly its flag are entitled to repatriation in the following circumstances: (a) if the seafarers' employment agreement expires while they are abroad; (b) when the seafarers' employment agreement is terminated and (c) when the

seafarers are no longer able to carry out their duties under their employment agreement or cannot be expected to carry them out in the specific circumstances”.

It can be concluded from all above examples of regulations on wellbeing by MLC 2006 that it has contributed to a better living and working environment for seafarers but is still subject to revision as it cannot answer to the fundamental labor rights, especially with increased seafarers' fatigue and mental health concerns (Exarchopoulos et al., 2018).

2.2.2 Regulations and guidelines to fatigue

In regulatory terms, IMO has implemented a circular MSC.1/Circ.1598 - Guidelines of fatigue, which encourages all stakeholders of the maritime industry to recognize the concept of fatigue, raise awareness of it and establish all measures to reduce it among seafarers.

Another important IMO instrument to be considered to promote reduction of fatigue is Resolution A.1047(27) – Principles of minimum safe manning, with one of its objectives:

“to ensure that a ship is sufficiently, effectively and efficiently manned to ensure the welfare and health of seafarers through the avoidance of fatigue.”

In terms of management of hours of work and rest as another factor strongly affecting the level of fatigue, both ILO and IMO have developed regulatory mechanisms for further implementation.

ILO through the MLC 2006 convention, Regulation 2.3.2 'Hours of work and hours of rest' states that:

“each Member shall establish maximum hours of work or minimum hours of rest over given periods that are consistent with the provisions in the Code.”

The Convention sets the limits on hours of work or rest in the standard A 2.3.5:

“maximum hours of work shall not exceed: (i) 14 hours in any 24-hour period; and (ii) 72 hours in any seven-day period, or minimum hours of rest shall not be less than: (i) ten hours in any 24-hour period; and (ii) 77 hours in any seven-day period”.

In line with the ILO regulation, IMO has also implemented regulations addressing hours of work and rest through its STCW 1978 convention, where section A-VIII/1 defines the term *fitness for duty* and states that:

“each crew member shall be provided with a rest period of not less than minimum of 10h in any 24 h of period and 77 hours in any 7 days of period (IMO, 2020).

It is notable to mention that despite of all efforts to facilitate seafarers' wellbeing, working hours in the maritime industry including overtime are much higher compared to jobs on shore (Dimitrova & Blanpain, 2010).

2.3 Conclusions

As the research indicates, wellbeing is a strong determinant of an individual's physical, mental and social state. Moreover, its measurement is attained through these dimensions. Wellbeing gains more significance when it comes to the workplace with fatigue and its effect on occupational safety and health.

As the research determined, adequate and recommended duration of sleep is vital for an individual's wellbeing. There are a number of regulations and guidelines in the industry which address wellbeing and fatigue, providing all necessary measures to improve the first and to avoid the second, but various reports indicate that seafarers still suffer from excessive stress, anxiety and mental issues.

Chapter 3 – Research methodology

3.1 Theoretical perspective and research design

The current study is partially inspired by the researcher's own subjective observations on deteriorated wellbeing issues as an active seafarer in the maritime industry. However, the data that the researcher intends to collect will be in response to the problem statement from the theory itself. So, it is the theoretical concerns that the research gained its significance from and this explicitly depicts the relationship between theory and research (Bryman, 2015).

Theory is usually related with various meanings, but mostly it is related with the explanation of observed regularities (Bryman, 2015). For the current research purposes such a regularity is linked with the theoretical question 'why does seafaring as an occupation suffer from deteriorated wellbeing conditions?'.

The constructivism approach, which is subjective will be applied to the research as an ontological position because the answers to the study questions are expected to stem from participants' subjective perceptions (Bryman, 2015).

From the epistemological point of view, interpretivism (O'Gorman & MacIntosh, 2015) is applied having in mind that the researcher himself is part of the research, because he interprets the data and can never be fully objective and removed from the research (Gray, 2014).

The study itself has an exploratory nature (Gray, 2014) based on interpretive research on seafarers' wellbeing using semi-structured interviews. It is considered

to be inductive because as it is depicted in Figure 3, the new knowledge will be generated based on the data from the theory (Gabriel, 2013).

Figure 3

*Inductive method*¹⁰

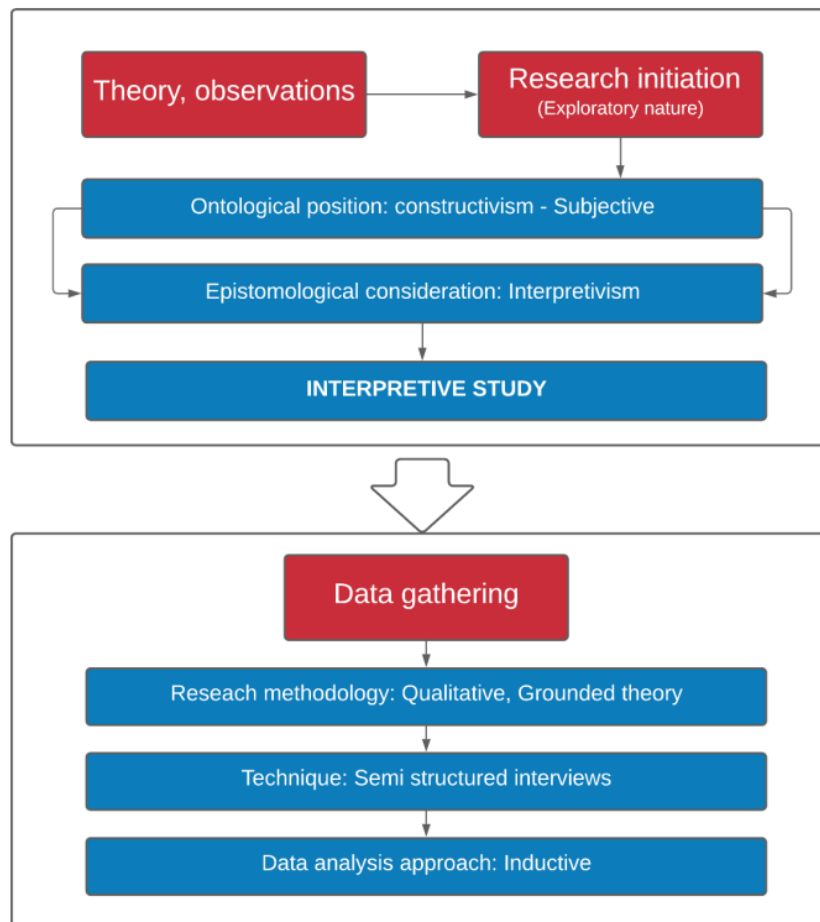


The Figure 4 depicts the process of shaping the research design of the study from theory and research relationship to data analysis.

¹⁰ Source: the researcher.

Figure 4

*Research design*¹¹



¹¹ Source: the researcher.

3.1.1 Used methodology and its principles

With the chosen constructivist and interpretivist theoretical approach to the study, the most suitable methodology which represents such a process is the Qualitative Analysis Grounded Theory (GT), developed with the inductive nature of the scientific method.

The main principles of the applied methodology are the most effective for the current study based on how they help to understand the reality, the way they examine the set questions and the way they facilitate finding of answers (Cropley, 2019). The researcher is the instrument himself and the subjects are the participants who constitute the data collection and analysis (Denzin & Lincoln, 2008).

3.2 Sampling process

The researcher finds a non-probability sampling method to be the most appropriate for this exploratory research. Due attention was paid to the significance of the sampling process in that it had to help to select the most appropriate participants who would deliver the most adequate data to find the answers to the main questions of the study (Bryman, 2015).

3.2.1 Target participants' selection

The participant selection was based on both non-probability convenience and snowball sampling. The convenience approach is simple and easy in terms of approaching seafarers and stakeholders selectively paying due attention to diversity of their qualification, types of ships, nationalities, and their impact on the industry. On the other hand, with snowball sampling, which in some respect is a convenience method, the researcher, having reached a small initial group of seafarers, managed to reach other participants through their contacts (Bryman, 2015).

In terms of the sample size, the researcher decided to select as many participants as possible bearing in mind the availability of time necessary for transcribing interviews and further data analysis. Another criterion for deciding the size of the sample was

the breadth of the issue to be explored. The researcher realized that exploration of the seafarers' wellbeing could not be based on a single case study, such as seafarers from one type of ship with various ranks or seafarers from various types of ships with the same ranks (Cropley, 2019). So, for a broadly applicable explanation of the issue, the researcher chose various types of ships with various ranks as much as it was possible.

As the researcher's initial intention was to also derive data from maritime stakeholders to have an ability to find healthier answers to the research questions, the decision was made to engage various additional stakeholders. The questions that the researcher considered were: Which stakeholders would be most appropriate and influential in the maritime industry and how could the research? gain access to them?

Main selection criteria for the stakeholders were their impact, experience and knowledge of seafaring and seafarers' wellbeing. Therefore, stemming from this, the researcher managed to gain access and engagement to psychologists working in seafaring, senior employers at shipping companies, medical consultants in the maritime industry, those running companies working exclusively on seafarer wellbeing, an international trade shipowners' association with a strong impact within maritime industry, maritime charity organizations working in ports, which have a good knowledge of seafarers' wellbeing, and a seafarers' welfare and assistance network.

3.2.2 Participants engagement for the interview

The initial step in approaching the participants was to determine the main target elements of selection: nationality, qualification, experience based on ship type and impact on the maritime industry from the stakeholders' perspective. As the researcher was based at the World Maritime University (WMU), it was obvious that the main method of reaching participants would be through recommendations from colleagues and supervisors and further using snowball sampling as described in Chapter 3.2.1, either face-to-face or online through recording applications such as Skype or Zoom as described in Chapter 3.3.1.

The interviewing of the first participant, a Turkish seafarer, took place in December of 2019. He offered to be interviewed, as he mentioned his increasing interest in the

subject of the study. He further introduced the researcher to three other Turkish seafarers and the researcher managed to conduct interviews with them during his visit in Turkey in December 2019 and later in January 2020 with another seafarer online.

All other remaining interviews were conducted online from the university as the researcher had to remain in one location for his studies. Bearing in mind the main target criteria for selection, the researcher found it quite difficult to gain access to such seafarers from one location. For this reason, the business and employment orientated online service, LinkedIn, was found to be extremely useful. The researcher established contact by sending a message with complete details of the intended study project and its objectives, seeking participation. With such an approach, a successful response was received from a large number of participants who also recommended their colleagues and friends.

Access was obtained to seafarers from Philippines, France and Latvia as well as to a pilot from Belgium by the supervisor's indication and interviews were conducted with them by February 2020. Seafarers with the nationalities from Russia, Spain, The UK, Ireland, Germany, Finland, The USA, Canada, Ukraine, Panama, Greece and Bangladesh were engaged in the qualitative interviewing process. Another way of engagement was assistance from invited lecturers and maritime professionals at WMU, who were still active seafarers themselves.

Finally, the researcher managed to engage 26 active seafarers and 1 active pilot in the interview process.¹²

It became obvious that the LinkedIn platform would be the best means of facilitating maritime stakeholders' engagement in interviews as well. It was quite challenging for the researcher to gain agreement from several of the stakeholders as they expressed a desire to get deeper insight into the main objectives and purpose of the study, particularly where it would be published and who would have access to the final

¹² The full demographic data of all participant seafarers is depicted in Table 2, chapter 4.

version. In total, the researcher managed to conduct online interviews with 11 maritime stakeholders from the UK, Germany and Ukraine from March to July 2020. Most of the participants expressed a desire to receive the complete and final version of the study.¹³

It is notable to emphasize that most of the seafarers and some of the maritime stakeholders expressed their excitement for participation in the study as they acknowledged the importance of wellbeing in the maritime industry.

3.3 Data instrumentation – Semi structured interviews

The successful outcome of an interview very much depends on the level of interaction between the interviewer and interviewee. The researcher aimed to have a dialogue with the participants, or in other words to have a conversation prior to the interview day which would inform the interviewees of the importance of their reflexive response. Understanding the fact that not every participant might have the ability to have an element of improvisation during the interview process, the researcher decided to measure individual qualities of each participant during the process of engagement in the interview (Knapik, 2006). This was mainly achieved by a brief introductory conversation with several questions recognizing the weakness and strength of each participant in terms of their responsiveness.

The semi-structured interview, also called a standardized interview, was used for the research, which entails an administration of the interview schedule by an interviewer. The reason for selecting the semi-structured interview was that it gave a possibility to give each interviewee the same amount of context for questioning with an accumulation of replies being made in response to identical cues (Bryman, 2015). The researcher found such kind of interviewing flexible in the sense that it allowed him to change the order of questions when needed, asking new questions or removing those falling out of context (Gray, 2014).

¹³ The full demographic data of all participant stakeholders is depicted in Table 3, chapter 4.

Another reason for choosing the semi-structured interview was that it offered better prospects of recording data during the interview. Brief notes were made in writing and the whole interview was recorded electronically to expand the notes later in case it was necessary (Cropley, 2019). Only 4 seafarers were interviewed face-to-face and all other participants online. The duration of the interview process on average was 50 minutes.

Interview questions for all participants contained mainly open-ended questions, where respondents had more freedom to elaborate the answer, but also closed questions, where respondents were given a limited amount of possible answers (Cropley, 2019). The types of questions were based on Spradley's description (2016) of the nature of systematic questions:

1. Questions addressing the object of the study.
2. Questions addressing concrete examples from the interviewee's own life.
3. Questions asking for clarification of idiosyncratic language.

The researcher in consultation with the supervisor structured the interview questions separately for seafarers and maritime stakeholders.

For seafarers, the guiding questions were divided into five parts. The idea of the structure was to induct the interviewee into the process starting with his / her identification and terms of employment, next moving to awareness of fatigue and its causative factors leading to the perception of wellbeing. The perception section as the core and central part of the interview process primarily addressed the factors causing negative influence on seafarers' wellbeing. Participants were asked closed type questions with 'how often' and 'how does' with five optional answers. The questions in the following sections addressed seafarers' response to regulations about wellbeing, practice of adjustment of hours of work and rest, impact of workload and manning levels on wellbeing with the final section about seafarers' recommendations for further improvement.¹⁴

¹⁴ See Appendix 1 - Sample for semi-structured interview with guiding questions – seafarers.

Guiding questions for maritime stakeholders were also divided into five parts with the idea to collect industry knowledge and responses to wellbeing and fatigue, its regulatory mechanisms, recognition of adjustments of work and rest hours and reasons for adjustments, impact of manning levels, policy and training on wellbeing and further suggested needs for improvement.¹⁵

3.3.1 Data collection

For data collection, the researcher used a recording device when conducting face to face interviews, making sure that recorded material was backed up safely.

For the online interviewing process, all participants were offered options for meeting through a video communications application, either Skype or Zoom. Both options had the features to record audio and video material, which were essential for further data analysis processing.

3.3.2 Content processing

The researcher commenced content processing, which means recorded interview transcription, concurrently with conducting interviews with participants. As it was known initially, the expected number of participants was close to 40, so the researcher had to carry out this rigorous work to save time later for data analysis.

The transcription process was extremely important in a way that the researcher was trying to derive information from respondents from the point of view based not on what they said but how they said it. Most attention was paid to capturing interesting points and drawing attention to any inconsistencies in the interviewee's answers (Bryman, 2015).

The transcription process comprised conversion of recorded interviews from a video format into mp3 audio file, which was later uploaded online to a paid auto transcription service, either 'Transcribe Wreally' or 'Happyscribe'.¹⁶ Transcribed material was subject to further corrections, which was another time consuming work and on

¹⁵ See Appendix 2 - Sample for semi-structured interview with guiding questions – Maritime stakeholders.

¹⁶ Information about online transcription services can be found on: www.transcribe.wreally.com and www.happyscribe.co

average it took 7h to complete correction of one interview. In total, the researcher managed to fully transcribe 38 interviews.

3.3.3 Data analysis technique

One of the difficulties as recognized with the qualitative data analysis process is that this method generates a huge amount of information in the form of transcribed interviews, notes, and documents. The applied methodology is rich in this context, but it also makes it hard to select the most efficient path for analysis (Bryman, 2015). For this reason, the researcher viewed all available analysis methods and found Grounded theory to be the most relevant. Firstly, it is close to the applied methodology in a way that, with its inductive reasoning, it constructs the theory through the elements of gathering, synthesizing and conceptualizing data. In other words, the answers to the research questions are emerging from the data. Secondly, the process of coding is the central to it (Charmaz & Bryant, 2010).

Coding in Grounded Theory qualitative analysis (GTQA) comprises the procedure where memos are written during data collection to formulate the process from the researcher's point of view. Further, the research process includes open coding of data or, in other words, identification and labelling of the data for building the categories (Charmaz & Bryant, 2010). Therefore, such a process makes the subjective reality most categorized and accurate and hence the methodology chosen was the most effective in terms to collecting various realities and building a general understanding of seafarers' wellbeing.

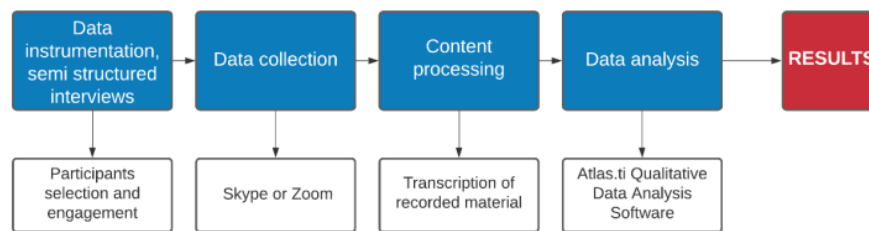
The researcher commenced the data analysis process concurrently with interviewing as soon as one of the interviews had been fully transcribed. This process comprised examining, categorizing and coding of data in conjunction with the interview questions' main themes. The process progressed with an initial description of data, then through a process of disaggregating of data into smaller parts to see new emerging concepts (Gray, 2014).

For data analysis process a software ATLAS.ti, version 8 was chosen.¹⁷ “It is a powerful workbench for qualitative data analysis of large body of textual information and helps the researcher to explore the complex phenomena hidden in the data. It offers tools to manage, extract, compare and explore meaningful pieces of data in a systematic way based on a VISE principle. VISE stands for visualization, Integration, Serendipity and Exploration”.¹⁸

Figure 5 depicts the process from data instrumentation to data analysis with the results.

Figure 5

*Data instrumentation process*¹⁹



3.4 Validity, reliability and applicability

Even though there are ongoing debates on whether how much the qualitative data is subject to terms of validity, reliability and applicability in the broadest context these terms are still applicable (Noble & Smith, 2015).

Validity is the precision with which final findings reflect the data and represent the integrity of the applied methodology (Long & Johnson, 2000). The term validity is mostly relevant to the quantitative research methodology, but for qualitative research

¹⁷ The researcher purchased software licence for the latest version 8. Information about software can be found at www.atlasti.com.

¹⁸ From ATLAS.ti user's manual, http://downloads.atlasti.com/docs/manual/atlasti_v8_manual_en.pdf

¹⁹ Source: The researcher.

the term can be referred as the truth value (Noble & Smith, 2015). It represents an alternative terminology to validity and can be explained as clearly presenting participants' perspectives within multiple realities (Lincoln & Guba, 1985). Truth value for the current study is measured through the applied ontological position of constructivism, where the validity of the final findings is strongly based on the participants' experiences and then the researcher's ability to interpret the knowledge and the truth.

Reliability for quantitative studies captures the concept of testing of the quantitative numerical data or has the purpose of explaining the data. But for qualitative studies the only viable way to evaluate reliability is evaluation of quality itself or holding the purpose of generating the understanding of the data (Stenbacka, 2001). This has been achieved through selection of participants from various types of ships and qualifications, who shared almost the same working environment, affected by the same variables. They all delivered various points of views during the interview process, mainly capturing the same problematic idea addressing wellbeing. The same problem had been identified as a statement which emerged from the literature review and this theoretical background was referred to as the means to support the findings in the discussion section.

Applicability or transferability refers to the concept which parallels external validity. Stemming from the nature of the research being carried out among a specific group of maritime professionals sharing a common issue, the study findings tend to be oriented to the contextual uniqueness of the social world being studied, the maritime industry (Bryman, 2015).

3.5 Research ethics

Permission was obtained from the World Maritime University (WMU) Research ethics Committee to proceed further with the studies prior to data collection from the participants. The formal document illustrating all information about the research proposal, information collection methodology, information storage and participants'

consent form was submitted, which was reviewed, and permission was obtained in December of 2019.²⁰

All participants were fully informed about their rights in terms of the information usage and their anonymity by a consent form which was reverted signed by each participant. All information obtained during the interview process was strictly protected and destroyed after completing the research.

²⁰ Refer Appendix 3: Ethical considerations include: WMU research ethics committee protocol and interview consent form.

Chapter 4 – Results

4.1 Introduction

This section describes the sociodemographic characteristics of participants and the main findings of the study based on the seafarers and other stakeholder interviews conducted.

Apart from general analysis including all seafarers, data analysis was also conducted to take into consideration the types of vessels they worked on, due to the relevance of this variable to the results. Findings are shown both for the whole sample (all seafarers) and also for seafarers based on vessel type: tanker vessel, cruise ship or other type of ship.

4.2 Participants' sociodemographic details

4.2.1 Seafarers' sociodemographic characteristics

The study sample consisted of 26 active seafarers and 1 active pilot (see Table 2). Nationalities of the seafarers included Philippines, France, Latvia, Russia, Spain, the UK, Ireland, Germany, Finland, the USA, Canada, Ukraine, Panama, Greece and Bangladesh. The pilot was from Belgium. All participants were male except for one female seafarer. Eighty percent of the seafarers were from the deck department (masters, senior officers and junior officers), and the remaining 20% held different ranks from the engine room department, deck department and catering department (cook).

Different types of vessels were represented including cruise ships, oil and chemical tankers, bulk carriers, NFS ship, expedition vessel, multi-purpose vessel, icebreaker, LPG carrier, dredger, car carrier and tugboat.

Table 2

Participants' sociodemographic characteristics – Seafarers

	Seafarers' Sociodemographic Characteristics						
	Rank	Nationality	Ship type	Age	Gender	Years in rank	Sea service
1	Master	The UK	NFS Ships	56	Male	7	38
2		France	Product tankers	38	Male	6	16
3		Spain	Exp. vessels	49	Male	3	20
4	Chief Officer	Turkey	Bulk carrier	32	Male	1.2	10
5		Turkey	Chem. tankers	31	Male	3	10
6		Russia	Oil tankers	30	Male	0.4	8
7		Philippines	Bulk carrier	53	Male	7	23
8		Canada	Multi purpose	30	Male	0.4	3
9		Panama	Bulk carrier	30	Male	0.9	10
10	1st Officer	Greece	Cruise vessel	43	Male	10	13
11		Germany	Cruise vessel	30	Male	0.3	10
12		Germany	Cruise vessel	29	Male	2	5
13		Germany	Cruise vessel	27	Male	0.3	4
14	2nd Officer	Turkey	Oil tankers	31	Male	1	8
15		Latvia	Product tankers	26	Male	0.9	6
16		Finland	Ice breaker	30	Male	3	6
17		Ukraine	Bulk carrier	31	Male	5	12
18	3rd Officer	Ireland	Cruise vessel	33	Male	1	4
19		The UK	Cruise vessel	28	Male	4	7
20		Bangladesh	LPG	30	Male	1.6	3.5
21	Junior Officer	Finland	Cruise vessel	24	Female	0.6	0.6
22	Chief Engineer	Philippines	Bulk carrier	55	Male	12	28
23	3rd Engineer	Russia	Dredger	26	Male	0.6	5
24	Able seaman	The USA	Car carrier	27	Male	6	6
25	Mate on tugboat	The UK	Tug boat	23	Male	0.4	3
26	Cook	Turkey	Bulk carrier	52	Male	30	30
27	Pilot	Belgium	All types	52	Male	22	22

4.2.2 Maritime stakeholders' sociodemographic characteristics

Regarding the stakeholders, Table 3 shows the representatives of different maritime organizations who were interviewed, including shipping companies; NGOs, both representing industry and seafarers' interests; companies engaged with charities; those offering welfare and health care services to seafarers, and psychologists and medical consultants.

The selection criteria were based on the influence of the voice of the stakeholders regarding ongoing discussions in the maritime industry, including seafarers' wellbeing.

Table 3*Participants' sociodemographic characteristics – Maritime stakeholders*

	Maritime stakeholders' Sociodemographic Characteristics		
	Organization / Company	Designation	Years in position
1	International trade association for the ship management industry	Secretary general	11
2	International trade union	Global wellbeing program coordinator	14
3	International seafarers' welfare organisation	Project manager	6
4	Maritime charity offering welfare, chaplaincy, mental health support to seafarers	Regional manager in Brasil and Africa	5
5	International trade association for merchant shipowners & operators	Director of employment affairs	8
6	Private company consulting seafarers' wellbeing	Chief executive	1
7	Non profit organization supporting wellbeing, risk advisory and training	Psychologist	3
8	Consultancy firm offering management & crises response solutions	Managing owner / Psychologist in maritime sector	1.1
9	Private company offering seafarers mental health support and solutions	Managing director	0.7
10	Shipmanagement company	DPA / HSSEQ manager	0.1
11	Private firm providing medical services to shipping companies and seafarers	Medical consultant	3.5

Outcomes: Seafarers' Interviews

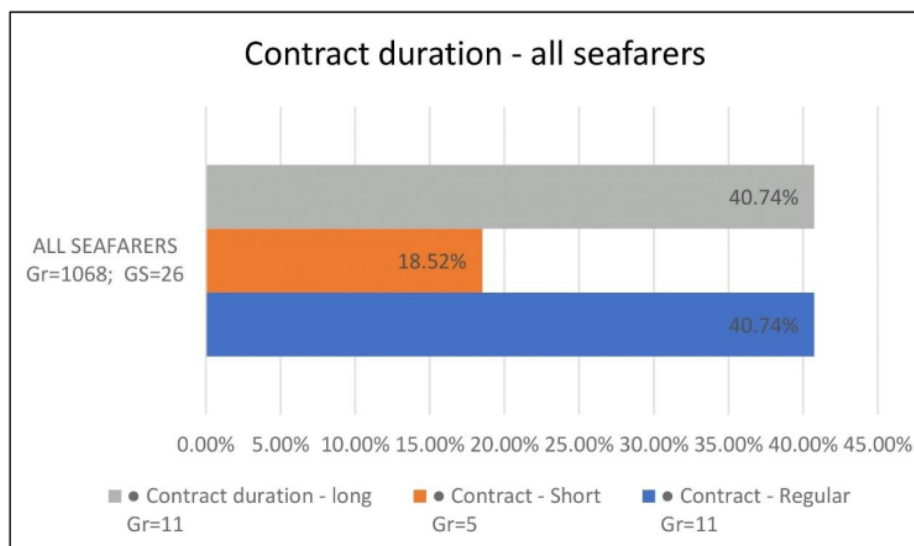
4.3 Terms of employment and work routine

4.3.1 Contract duration, leave duration and on time relief

As Figure 6 shows, for 40.74% of seafarers, the contract duration is no longer than 4 months²¹; for 40.74%, it is longer than 4 months²² and for the remaining 18.52%, it is no longer than 3 months²³.

Figure 6

Contract duration: data from all seafarers²⁴



As shown in Figure 7, contract duration, independently of rank, is variable and mainly determined by the type of ship. Figure 7 depicts such differences. For tankers, half of

²¹ For current research purposes, the contract duration longer than 3 months but not exceeding 4 months is referred as regular.

²² For current research purposes, the contract duration longer than 4 months is referred as long.

²³ For current research purposes, the contract duration not exceeding 3 months is referred as short

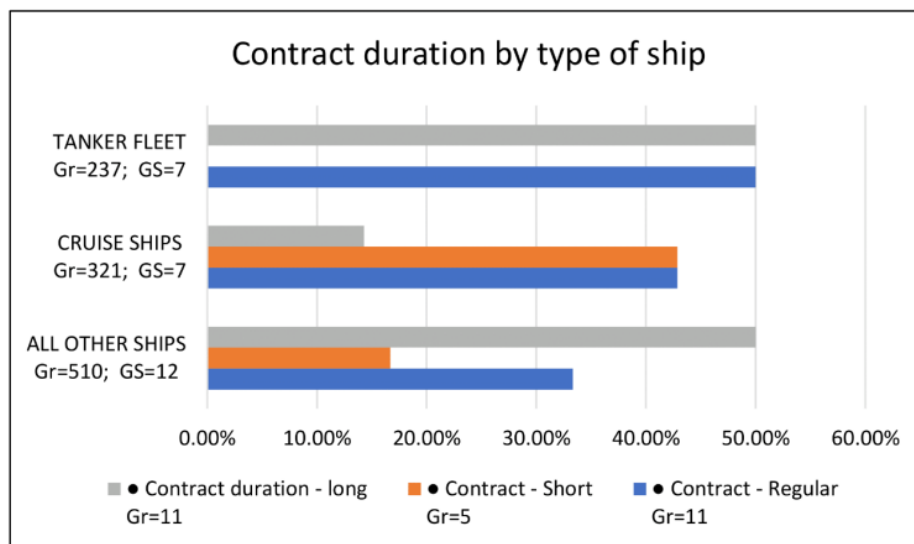
²⁴ The source: **current and all other upcoming graphs are produced by researcher based on the data exported from ATLAS.TI.** GR – means number of quotations assigned to the code and GS – means number of participant members.

respondents were employed on regular contracts while the other half had long contracts, and none had short contracts. Such differences were based on either the rank or nationality or both. As a chief officer (respondent No.6) from Russia stated: *“Standard contract is the four months long. It differs how I like to spend my vacation”*. The 3rd officer (respondent No.20) from Bangladesh noted: *“average duration is 6 to 9 months”* and a 2nd officer (respondent No.14) from Turkey: *“Yes, six months for every contract”*.

The situation differed for cruise ships, where 42.86% of the respondents serve with regular contracts, the same percentage on short contracts and only 14.29% on long contracts. Regular and short contracts were found to be mainly signed by deck 1st officers and 3rd officers, whilst junior officers usually serve on long contracts, as the junior officer (respondent No.21) from Finland stated: *“Okay, It is normally six weeks as the maximum, but when I went to the passenger ship it was six months”*.

Figure 7

Comparison of contract duration among seafarers serving on tankers, cruises and other types of ships



Contract duration for 50% of the respondents from other types of ships different from tankers and cruise ships was long, while 33,33% of this group claimed to have regular

and 16.67% short contracts. In this case the nationality was found as the primary determinant to the length of contract. For example, a chief officer (respondent no.7, bulk carrier) from Philippines said his contract in average would last 9 months and a chief engineer (respondent no.22, bulk carrier) with the same nationality mentioned his contract duration was 6 months in average. Same is claimed by the cook (respondent no.26, bulk carrier) from Turkey with a stay onboard of 6 months. Another chief officer (multi purpose vessels) of Canadian nationality served onboard about 5 months in average and a master (participant no.1, NFS ships) from the UK noted equality in voyage and vacation durations in his comment:

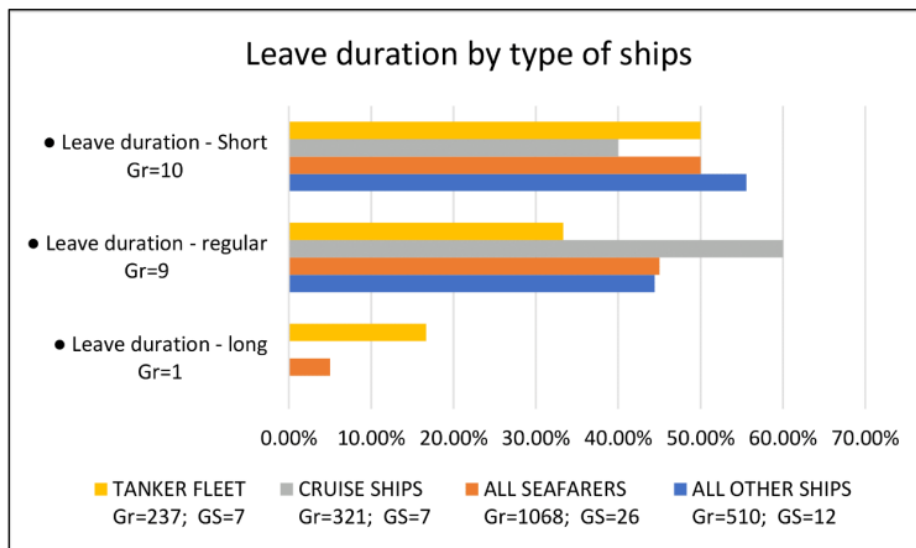
“My employment contract is a like an on a rolling basis. So for employment there, they would have had to be given three months notice regarding the actual trip length. So when I go on the ship my stay varies between two months and four months. Vacation period is its equal length. So one for one leaf ratio”.

Leave duration²⁵, as it happened with contract duration, was vastly determined by nationality and ship type. As shown in Figure 8, only 5% of all seafarers enjoyed long home stays, while remaining 45% reported regular leave duration and 50% short.

Figure 8

Leave duration of seafarers serving on tankers, cruises and all other types of ships

²⁵ For current research purposes leave duration has been divided into short (means home stay less than 2 months), regular (means home stay with the same duration as the contract onboard) and long (means home stay longer than contract duration).



For tankers, 50% of the participants reported they had leave of short duration. Decisions for such short home stay were made either deliberately or being under pressure from the companies. For example a chief officer (respondent no.5, chemical tankers) from Turkey regretfully mentioned in his comment pressure from the company:

"I stay around two and a half months at home. It totally depends on my company manager or crew manager asking me how long I want to stay at home.

- *Do you feel any pressure from your company?*
- *Yes, I feel pressure, because company makes me feel like I lose my knowledge and experience if I stay home longer, so they might not employ me".*

Meanwhile, a chief officer (respondent no.6) from Russia stated his own decision about vacation duration:

"Normally I prefer to stay at home short period of time. So two months, three months are normally maximum for me and I decide it myself".

Leave duration for seafarers from cruise ships differed from tankers in a way that 60% of experienced regular home stay duration and 40% short. None of the seafarers from cruise ships reported long home stays. Regarding all other types of ships, 55.56% of participants reported short vacations and 44.44% regular home stay periods. The able

seaman (respondent no.24, car carriers) from the USA reported in his comment the influence of the maritime union, which would determine his leave duration: *“Usually a month, two months because the thing is I'm actually part of a maritime Union. So, we get the jobs through the top board. I was there for like a contract so it could be, you know, a rotary contracts for months. You can if you want take a relief contract which is two months”*.

Regarding reliefs, unavailability of relief, inconvenient port, long voyage and other unpredictable reasons were mentioned by all seafarers as factors related to delayed repatriation from ships. Rank was not found as the primary determinant of delays in most cases, but rather ship's type. Delays were experienced by 42.3% of the respondents from all ships and the remaining 57.69% experienced relief without delays. However, only 14.29% of seafarers from cruise ships reported delayed relief. An explanation for this low proportion for cruise ships was given by a participant in connection with the seafarers' rotation, which is well organized by crewing companies. As he said:

“Yeah, so roughly what happens is, you get a contractual termination date that you're meant to fly home. If you are required to stay longer the company will email you and ask you to stay longer. I've had to extend the last four contracts. I've actually stand in two of them for one week period for seven days due to relief not being available and however, I can refuse this. If I refuse this, they will either try and get some other relief or they will say to me I have no choice but to stay. Then I go on to an emergency rate. So it's my pay scale changes if I'm forced to stay beyond my contractual obligation”.

This was not the case for all other ships as various seafarers shared different experiences in their comments. For example, as per respondent no.7:

“Of course, we have to wait for our reliver.

- *So that means that when your contract is finished, crew change is not arranged immediately. Do you have to wait?*
- *Yeah, we have to wait for some time.*
- *How long time do you have to wait?*
- *Extra time, two months”*.

And as per respondent no.24:

“Yeah, sometimes. Normally my company tried really hard to respect the times. We have a collective bargaining agreement that establishes how much time you can extend your contract in case they don't find a replacement for you. But normally it's around 3 months, it can be a little bit more, can be a little bit less, but I have done sometimes four months and a half.”

Ninety percent of the participants were not provided rest after a long journey before joining the ship, but were directly assigned to their duties. Only 10% confirmed that their employer company had it as an official procedure to provide them some rest before joining the ship.²⁶

4.3.2 Onboard working hours

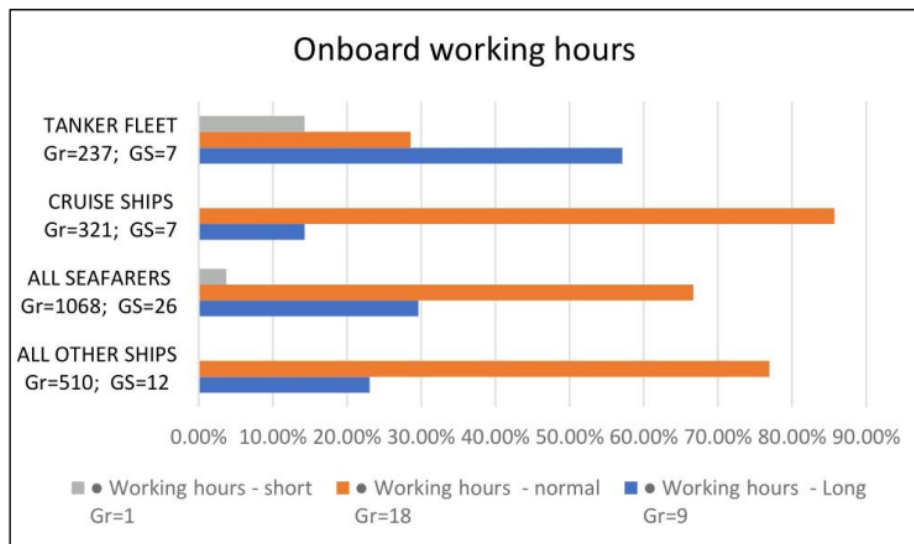
Ship types, trade, and seafarers' primary duties were found as the main factors influencing working hours onboard. As Figure 9 indicates, 29.6% of the seafarers from all other types of ships had long working hours, 66.7% experienced normal working hours and only 3.7% short.²⁷

Figure 9

Comparison of onboard working hours among various types of ships

²⁶ Refer Appendix 4: Nodes assigned to the group 'Terms of employment and work routine'.

²⁷ For current study purposes short working hours means hours not longer than 8h, normal means hours between 8 and 12 and long means hours 12 and higher.



It is important to emphasize that the longest working hours were more characteristic of tankers, while onboard cruise vessels, seafarers reported more normalized working hours. A master (respondent no.2, product tankers) reported that trade was the major influencer on working hours:

"It's is very depending on the trade. It goes from let's say a small day six hours to 14 hours a day".

Moreover, a chief officer (respondent no.5, chemical tankers) stressed that the work schedule determined his working hours:

"It depends on the work schedule but most of the time I work around 16 hours a day".

Another participant, a 2nd officer (respondent no.15, oil tankers), mentioned his excessively long working hours of usually 15 or 16 hours:

"Okay, I will answer this question, I will explain how many hours I work. I worked more than 15 hours. You know, sometimes I worked about you know, without sleeping 20 hours and 18 hours. This is what it was my usual working hours. I can tell you that about 15 hours 16 hours more or less right?".

Moreover, the 1st officer's (respondent no.12) statement proved that fact that working hours on board the cruise vessels were more organized with normal duration:

“Yeah, so we have eight hours normal duty. So watch officer duty to two hours overtime and it's say I said, that's usually what I can stay on. Of course it's the usual stuff when you have audits or external stuff, which is coming in. Of course this you cannot calculate but I think with the morre organized team, you can manage better results easily”.

4.4 Awareness of fatigue and its causative factors

4.4.1 Fatigue awareness

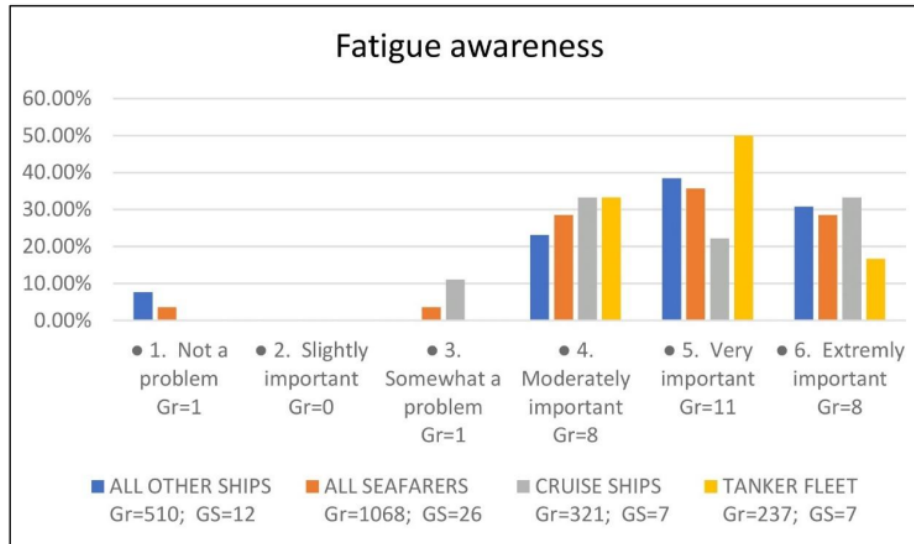
As Figure 10 shows, almost all seafarers acknowledged that fatigue is an issue in general²⁸. Only 3.57% thought it was not a problem at all. The level of awareness was found to vary from “not a problem” to “extremely important problem”, mainly depending on the ship type. For example, 50% of those respondents from tanker vessels considered fatigue as “a very important problem” and only 16.7% thought it was an “extremely important problem”. For cruise ships, fatigue turned out to be a “very important problem” for 22.2%, while 33.3% considered it as “extremely important”:

“I think nine point five to ten on that as well. Fatigue is terrible and makes people angry. It makes people short-tempered and confused and frustrated. People are very hard to deal with when they're fatigued. They can't do their job correctly; they make mistakes and they get angry because they're making mistakes. That's very much fatigue, which is a serious impact and you're not working. How could I put into words.... if you have fatigue it's like you are trying to run in water. {...} Your brain cannot function properly. It can still function but just not properly. It can't react as fast and it's like trying to run in water. There's resistance against your brain, it cannot function normally”.

²⁸ See Appendix 5 - Nodes assigned to the group 'Awareness of fatigue and its causative factors'.

Figure 10

Fatigue awareness by types of ships



Fatigue was viewed as a “very important problem” by 38.5% of seafarers sailing on all other ships and a similar proportion considered it as “extremely important”. With regard to the low number of respondents not considering fatigue as a problem, they associated its importance with the ship type (i.e., tanker ships) and easily manageable work schedules. As per respondent no.23:

“Yeah, I’m not really tired. I have had very enough rest hours in this company.

- Okay interesting. It’s your experience but in Maritime industry, what do you think in general? Not only about your current company...

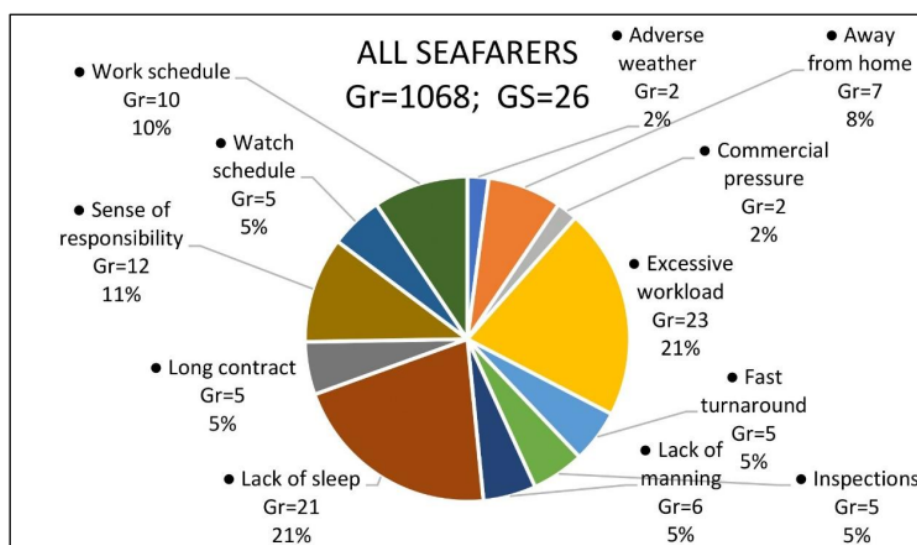
- I can say last company, I wasn’t really happy with my rest hours. We were always some kind of chased by inspection things, you know. On tanker ship we were always having a lot of inspections and then it was always followed by some checklists and paperwork and some things quite trying to keep up with all the schedule.”

4.4.2 Factors causing fatigue

Figure 11 depicts the 12 factors causing fatigue as identified by the seafarers from all types of ships. Excessive workload and lack of sleep were the most frequently identified factors contributing to fatigue when all types of vessels were analyzed. However, when types of vessels were analyzed separately, excessive workload concerned only 11.1% and lack of sleep 33.3% of the seafarers from tanker vessels. For those from cruise vessels, the figures of these issues were more balanced: 27.6% vs 20.7% respectively. The same balance was noted for all other types of ships with 20.8% vs 16.7% respectively.

Figure 11

Main factors causing fatigue by seafarers



Seafarers from cruise vessels named regulations as the main element causing excessive workload. For example, a 1st officer from Germany (respondent no.12) saw redundancy in regulations from companies, which would increase workload for officers:

"I can say it from the world of cruise ships. It's a lot about regulations which are let's say set by companies which makes a lot of additional work workload for officers because they are

mostly developed by people, assure which are in a lot of times. So big companies try to prevent your do mistakes. They want to prevent the mistakes happens again and create own additional regulations, which is all about more and more."

On the contrary, seafarers from tanker ships mentioned that time work schedule (night and day) led to excessive workload and lack of sleep, which is well expressed by a master (respondent no.2):

"for my particular trade I would say it's changing between working at night and working during day time in my opinion.

- So you think that's the only factor?

- Yes, because it's the main factor for me, because we cannot... we.. I don't have... I don't have the same schedule every day. I mean it's not... it's not like doing working on a watch from 0 to 4. You get used to it. For me...I cannot get used to it. I'm working night time. Then I have to work day time and it's changing all over the week."

Regarding lack of sleep, tanker crews were the participants who suffered most from it. Reasons named included commercial pressure, poor management of crew, insufficient manning, and excessive workload:

"I will tell you the problem is yeah, all third parties are expecting something from the vessel, you know, the owner is asking something, the port authorities asking something and the some maritime authorities are asking something. We have a loss of schedule combining in only 20 people in average {...}. Everybody's asking something from them. {...} Pressure is caused from head.. as you are captain from head to tail. Everybody's under pressure and Captain is taking about this. And as for the crew...we cannot say anything, but there's some job and it needs to be done. If it's not done, then the shi is not moving. {...} The other people are not happy. That's simple. We have lots of job descriptions. {...} There are internal pressures. I'm talking about internal present...and the other ones were external pressures over crew and some of them is home sick. They have psychological problems and some work has to be done in proper way. There are training rules on boards and you have to train your crew because things must work as a chain system."

For a master (respondent no.3) of expedition vessels, one of the main reasons for fatigue was the difficulty in handling crew and poor communication between shore-based personnel of the company and the ship:

“dealing with crew members, with problems personal problems with crew members as a master. I mean from my point of view is dealing sometimes with the lack of connection between office and the ship like a lack of understanding. {...} There's also increased stress {...} because of a lack of connection with your home. And also if there is problems with your crew changes, you need to go home and you want to go home and you cannot have a replacement or something and you have to wait for long. So that's the unexpectedly I mean like, you know, they tell you okay, you're going to go in a week and then anyway when two days before they say, oh sorry, you had to wait for 10 days more.”

The work schedule resulting from ships' fast turnarounds was mentioned by participants of all other types of ships, which was acknowledged by a chief officer (respondent no.7):

“The rest of the schedule is the biggest problem. Of course, sometime we can stay only a very short time in port so and sometimes during one voyage we have different ports. So {...} so we cannot rest well when we are in Port.”

Meanwhile, another chief officer (respondent no.9) named daily work routine as the main factor causing him lack of sleep:

“Well what other reasons other than work I can say that there's maybe the routine that you have every day.. you know. Maybe the human is not.... how can I explain that... accustomed to. I mean, {...} you know we are for a long time at doing the same themes and working.”

The third most mentioned aspect by all seafarers as causing fatigue was the sense of responsibility. This factor was pointed out by 17.4% of participants from cruise vessels and by the 11.1% from tankers. This fact was well documented by a 3rd officer (respondent no.19) from a cruise vessel:

“Well, I wouldn't say that. No because I mean in my role as a third officer I get responsibilities. So the Lifeboat checks are mine. I can't delegate that to anybody because I'm the one that signing to say they're safe. {...} So, I mean that's a small example, but amplify that across the greater responsibilities I have within my job, then as the ships are huge I don't believe the

company divulged mass amount of resources into these tasks. They put a lot on to the individual to try and get it done. Hence why work longer than maybe I should? because I have those responsibilities which a life-saving responsibilities if you're checking LSA and stuff like that. So you've got to get it, right? So I have to get it right. I've got to invest time into it. I guess there's an argument to say I could check over these things more basically and not and not necessarily get it right, but then that would be either getting disciplined and at the expense of safety”.

And also by a chief officer (respondent no.6) from a tanker ship:

“There are also other factors that cause your team {...} because in my ranking I have a lot of responsibilities, but I just can let it go like it is. So I should control how the situation is.. how its set up..how a situation is going. Yeah, and I should control this process and sometimes situation coming from another ones from one situation coming and you spend a lot of time on it. And of course you get fatigued after this process. So your engagement in the process is very high.”

4.4.3 Fatigue mitigation

All seafarers interviewed acknowledged the benefits of fatigue mitigation strategies, but the response differed from participants working on different types of ships. The need to increase the manning levels was especially emphasized by the 37.5% of seafarers from tanker ships and by the 14.3% from all other types of ships. However, seafarers serving on cruise ships did not explicitly mention the influence of manning levels on fatigue.

The need for an additional officer was mentioned by the respondents in order to release the chief officer from keeping his/her watch and facilitating other officers to avoid 6 on and 6 off mode of watchkeeping. A chief officer (respondent no.8) explained the lack of additional officers through the company's control of budget:

“Well, to be honest, it is quite hard because now you know the company, they're cutting the budget. They are cutting the salaries. Then they always about try to make profit but I think for the most of the vessels especially the ones that have a huge workload, it will be a benefit to have an extra mate, you know, like the chief mate would be doing the work and the paperwork and then you have three mates keeping the watch. It is also a very good idea that six on and

six off watchers should be banned and to be honest the six on and six off system is completely brutal in the system. I mean you end up completely zombie, absolutely.”

and the same was confirmed by a 2nd officer (respondent no.15):

“Best way is to assign.. let's say one more officer for the bridge. {...} So chief officer has no watch and officers on the bridge or in CCR, they will keep four hours on and four hours off watch and they will have eight hours of rest. So they have enough time to do the extra work. So they don't need to work more than there's let's say supposed to and chief officer will have enough sleep because he will be on call in Port if you don't have a watch keeping. And let's say a solution for the problem from the bridge side of things one more officer and it kind of would resolve 75% of that. You have one extra man. Who will let's say take a chunk of the time and then everybody else can rest.”

Providing sufficient/good balance of rest and sleep hours was another strategy for fatigue mitigation as suggested by all participants with the same response proportion regardless the type of vessel. The impossibility of getting enough sleep following the rules to carry out the assigned duty - which involves lack of rest, excessive work schedule, not having a day off and others - was frequently mentioned by all seafarers from different types of vessels.

Shortening of employment contract duration was suggested by a 3rd officer (respondent no.20), saying that: *“I think to avoid fatigue we should get our contract shorter, like four months or six months and communication should be increased.”* Meanwhile a 3rd officer (respondent no.19) desired the possibility of more frequent shore leave:

“Yeah, okay, it would be the general well-being but I say that I sacrifice just like I say just having the ability to walk ashore for an hour just to get off the ship and get into a different Zone, you know.”

Other suggestions were made about healthy life and exercise, modification of watch schedule and crew training on fatigue, while 2% of the seafarers believed it was sometimes impossible to avoid fatigue at all as said by an AB (respondent no.24):

"It's just unavoidable. I think sometimes unavoidable especially being on the deck Department. Yeah, and and if you have a lot of port calls, it can be difficult to avoid. Yeah, as you know {...} you gotta be there."

4.5 Determinants of wellbeing

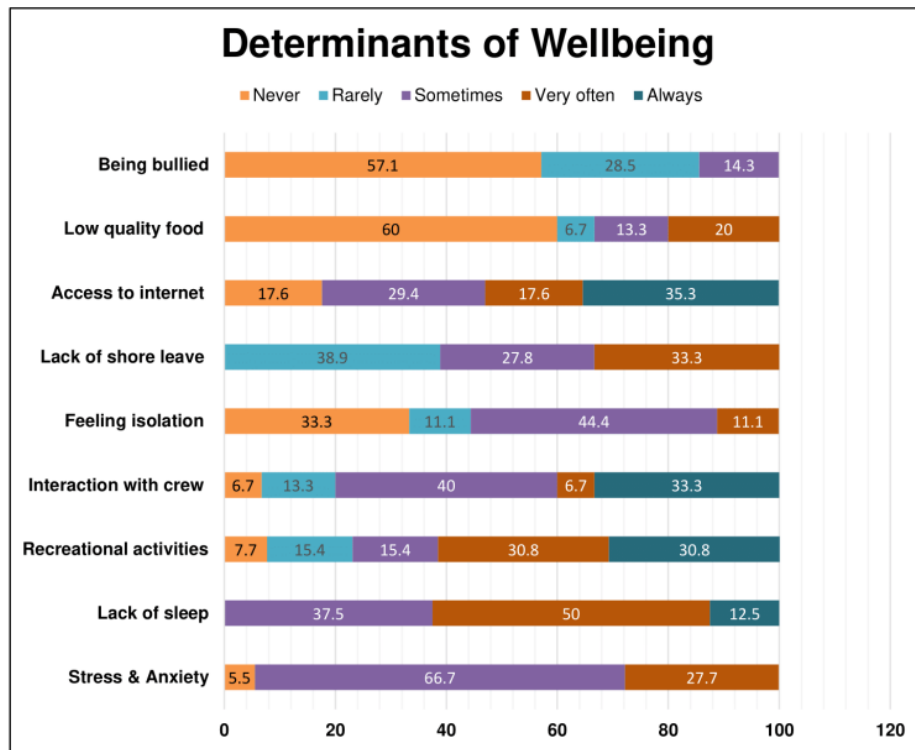
To explore the main determinants of wellbeing²⁹, seafarers were presented a list of factors and they were asked to respond to the question, 'how often they were affected by or how often they were engaged with the factor' on a 5 point Likert scale: Always, Very often, Sometimes, Rarely, Never.

The main results obtained regardless of the type of ship are presented in Figure 12.

²⁹ See Appendix 6 - Nodes assigned to the group 'Determinants of wellbeing'

Figure 12

Determinants of wellbeing revealed by the question 'how often?'

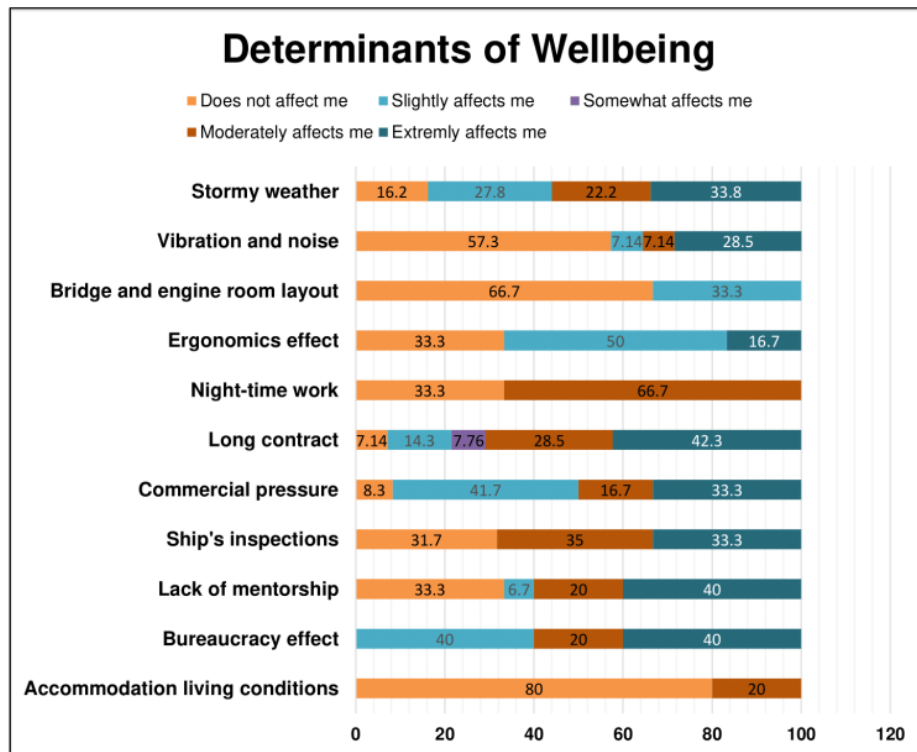


As the figure indicates out of all factors with negative impact lack of sleep, stress and anxiety and lack of shore leave are the most associated to the answer 'very often' and feeling isolation and interaction are associated with 'sometimes'.

The figure 13 reveals the results from the answers to the question of 'how does the given wellbeing determinant affect you' with a 5-point Likert scale: Does not, Slightly, Somewhat, Moderately and Extremely affects me.

Figure 13

Determinants of wellbeing revealed by the question 'how does it affect?'



The results indicate factors such as long contract duration, bureaucracy, lack of mentorship, night-time work, commercial pressure, inspections and stormy weather have the most extreme negative effect on seafarers' wellbeing.

In addition, seafarers were asked whether they felt, in general, happy or unhappy³⁰ onboard the ships; 66.7% responded "unhappy" and 33.3% said "happy".

³⁰ This study refers to the notion happy as the state of feeling of a seafarer being as a part of the ship's team and less affected by any of the determinants of wellbeing.

4.6 Awareness and effectiveness of regulations addressing wellbeing

A good awareness of the regulations addressing well-being was demonstrated by 84.6% of the respondents, while only 15.4% could not recall those regulations³¹. It is interesting to emphasize that 100% of the seafarers from tanker and cruise ships had a good knowledge of all regulations, while 33.3% from other types of ships did not:

"I forgot quite many things. I used to know in my last company because I always want to keep my rest hours as per regulation."

Exploration on how effectively the regulations influence seafarers' wellbeing indicated that the 85.2% of seafarers considered those regulations not effective. As one of the respondent masters explained:

"then it's is a very difficult balance because the regulation might not match with the reality and then this is a problem and then yeah, then the only way to survive and carry on with the operation is just cheating but this is no right. Of course I completely disagree with that."

A chief officer (respondent no.5) considered the regulations not applicable:

"Yeah, it's only regulation for me. Most people around me know regulation, but it's nothing. You cannot apply it. Yeah, it's not applicable in real life." And the junior officer (respondent no.21) vigorously described regulations as unrealistic:

"I think it's just unrealistic, honestly. The way it has to be broken down for example that you should have like 6 hours of uninterrupted sleep and stuff. It doesn't work. None of those things work. {...} I don't know what can be done about it. But in my experience when I had to read the laws for we had to read the laws because we had to give in time sheets, but I always felt there was a clash between my work and resting hours. So, yeah, and so for some reason there's always more work to be done and you don't sleep you have to get it done."

³¹ See Appendix 7 - Nodes assigned to the group 'Awareness and response to regulations addressing wellbeing'

4.7 Practice of adjustments of work and rest hours

The results³² indicated that most seafarers regardless of the type of the ship practiced adjustment to reporting on hours of work and rest.³³

4.7.1 Awareness and reason for adjustments

Adjustments to reports were confirmed by 82.7% of all seafarers, while 17.2% denied making adjustments. The frequency of such adjustments was reported as once per contract by 20% of participants, on a monthly basis by 70%, and on a weekly basis by 10%. It is interesting to highlight that the weekly adjustments were mostly made on tanker ships.

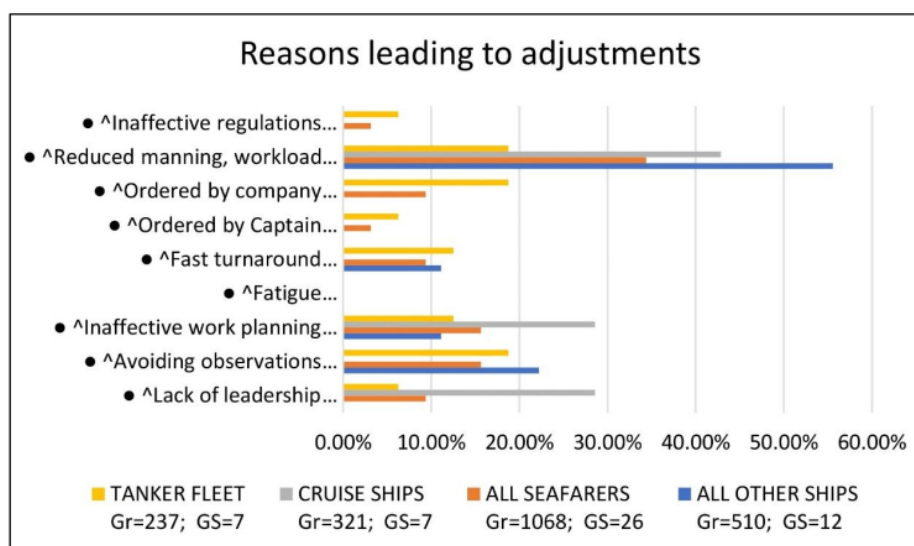
Figure 14 depicts all the reasons which led to work and rest hours adjustments. Reduced manning and increased workload, ineffective work planning, and avoiding observations prevail over other reasons for all types of ships. Other reasons mentioned were lack of leadership, adjustments ordered by captain or ordered by company, and ineffective regulations.

³² See Appendix 8 - Nodes assigned to the group 'Practice of adjustments of work and rest hours.

³³ With adjustments it is meant that seafarers have to falsify reports on hours of work and rest in order to cover actual excessive working hours and lack of sleep to avoid further observations.

Figure 14

Reasons for adjustments to reports on hours of work and rest.



4.7.2 Reactions to adjustments

Seafarers indicated that the main reactions to adjustments came first from company, second from master and finally from ship's senior management team. For tanker ships, most reactions came from the company superintendents (55%) and the least from the ship's personnel (10%). 2nd officer (respondent no.15) stated that:

"So, for company now, I may have mentioned that to my crewing manager, but it is usually responded with a laugh and I think how it is."

A chief officer (respondent no.5) made an astonishing comment on the subject by indicating that main reason of adjustment was related with the fear of losing their job:

"Of course. We are complaining sometimes but everybody is accepting this situation. For example, we are currently on board chemical tanker. Yeah. Sometimes we need high Purity standards and it takes days maybe three days, four days, and Captain knows. Most of the crew members keep their watch for 12 hours a day {...}so why they adjust their work and rest

hourss? They don't want to lose their job. They are afraid of losing. For example, if I tell master that there's a violation or the working hours is exceeding and it's over time he says, this is our job, you know seamanship is this and you also knew that before you come here. There is a saying in our country that if we say the truth then nobody wants you."

For cruise and all other types of ships, masters and companies were found reacting to such adjustments almost evenly.

4.8 Impact of workload and inadequacy of manning levels

One hundred percent of the seafarers, regardless of ship type and rank, confirmed adverse impact of excessive workload on their wellbeing and 71.4% confirmed the same with inadequacy of manning levels³⁴. Reduced manning level was mentioned as the main contributing factor to excessive workload. Such inadequacy was confirmed by both ratings and officers.

Analyzing this according to ship type, 100% of the respondents from tankers, 50% from cruise ships, and 70% from all other types of vessels highlighted the negative impact of manning levels and its contribution to high workload. Interesting points of view were expressed by the AB (respondent no.24) about how much positive effect rest had on work efficiency and company's control of budget:

"{...} you want your crew members more rested {...} and then that makes them work better. They're not fatigued so they can concentrate better. I think all around is definitely better {...} and companies I worked with...they're hesitant because it means they got to pay more."

and by a 2nd officer (respondent no.17) about how crew managed to use the time more effectively for getting more rest:

"like this one officer and one rating we have those things it helps really a lot because we can set a time for resting and we can share our working hours. {...} So it helps. I think all about having resting hours, you know."

³⁴ See Appendix 9 - Nodes assigned to the group 'Workload and inadequacy of manning levels.

Outcomes: maritime stakeholders' interviews

4.9 Response to fatigue and wellbeing

4.9.1 Fatigue and its causative factors

Fatigue was acknowledged as a very important problem in the industry by stakeholders who were interviewed: 54.5% considered it "rather an extremely important problem", 27.3% as "a very important problem" and the remaining 18.2% recognized it as "somewhat a problem"³⁵. Respondent no.5 addressed the significance of the ongoing COVID -19 virus issue:

"Well apparently at the moment especially now because of covid-19 I would say extremely important problem at the moment but in normal conditions I will say a very important problem."

Another respondent no.8 mentioned its significance as situational:

"I think that's a really really important question. And I think it probably is quite a significant problem. So that would be what sort of six or seven at the top end of the scale but it's situational."

And the respondent no.1 expressed the enormous relevance of fatigue by considering it not as a problem but rather as a serious issue for the maritime industry:

"Now you see you are not English, neither am I. The word "problem" in your language and my language does not mean the same as in English language. English would use the word issue instead of a word problem. So, if you're asking how serious today fatigue issue is then I would say in a scale a very important problem. If you are asking about the problem, problem can only be one hundred percent. There is a problem, there is not a problem. You can have a little bit of a problem or not a problem at all. So, that's why I have an issue with you and myself because I'm polish to understand the word problem using English by English is not the word that we think of and ask your professor if he's German, he would use the word problem as "no problem" a lot. But if you start using the word problem with British, they will go immediately. The same as with the word error you cannot say error or mistake it might be misunderstanding. So, our language immediately sets you off and if you're asking how serious today fatigue issue is then I would say in a scale 5, as a very important problem. If you are asking about the

³⁵ See Appendix 10 - Nodes assigned to the group 'Response to fatigue and wellbeing in maritime industry'.

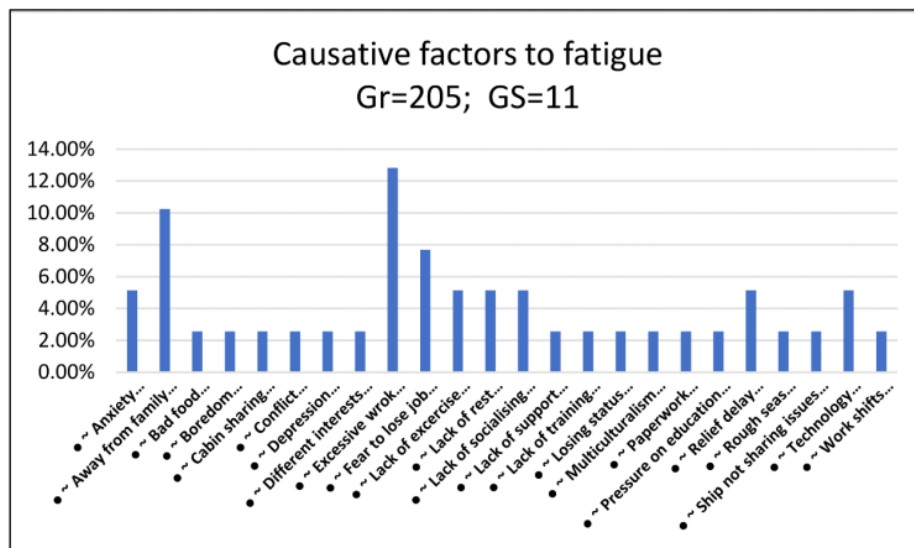
problem, problem can only be one hundred percent. There is a problem, there is not a problem. You can have a little bit of a problem or not a problem at all.” And further arguing that: “there is a problem with a fatigue but in my opinion there is more issue and challenge with fatigue not a problem and it's a serious issue on the scale its 5. I'm sorry I don't want to elaborate on this word this much, but it immediately sets you with a correct answer for the question. So, I admit that there is no problem with fatigue there is an issue with fatigue.”

Maritime stakeholders named 25 different reasons causing seafarers' fatigue as shown in Figure 15. This indicates excessive workload, being away from family, fear of losing their job and relief delay as outstanding among all the other factors depicted in the figure 15. As per the respondent no.3:

“so I think opportunity to sleep and yet various other different things so it can be particularly also tiring work, but then they can be you know hours of work and rest. And then there are various other things that can be a barrier to getting enough sleep.”

Figure 15

Factors causing fatigue by maritime stakeholders



Respondent no.6 (chief executive of a private company consulting seafarers' wellbeing) associated fatigue with limited rest and sleep:

"I think long work hours, limited rest and problems sleeping, Those are huge contributors. Also not being able to contact family, right? If they're worried about family that's really very significant. So if they're worried about their family at home, but they can't get in contact with them, that serves for a lot of stress. See if they know that they're OK at home and they can talk every now and then that seems to decrease a lot of anxiety onboard. So I think those are there. Of course, many other things. But those are probably the top topic."

And in the view of respondent no.8 (psychologist from a consultancy firm offering management and crisis response solutions) fatigue was a sum of several factors such as workload, paperwork, regularity of going back to the ship and crew changes:

"There are several. So one is the workload, Of course another is routine, seafarers are complaining about paperwork. I mean, especially when we talk about officers some of them are complaining about regularity like going on board. And I mean, let's say crew changes. Yeah, because sometimes it's the case where a company you know delay crew changes."

Being away from family and workload was confirmed by respondent no.5:

"I think it says it's workload and I think they work 14 hours a day and pressure from workload and also like missing the family for nine months and also less physical activity for some people and recreational facility. So all this combined in one."

whilst respondent no.9 mentioned workshifts, lack of sleep, food, and depression among other factors leading to fatigue:

"Well, work shifts. So depending on how the work is structured, you can have people who work too long too hard. That can mess up your sleep patterns. Then rough seas anxiety onboard when you go through certain ports, because they have some very high levels of security when it comes to controls, spicy foods can mess up your sleep patterns as well we've seen that happen. Yeah, food can have a huge impact on your sleep. Not getting enough exercise, depression. Obviously, depression levels. I mean, there are a lot of things that mess up your sleep patterns. But I think you're asking for the top three is probably work anxiety and depression from different sources and obviously food. How how they eat, you know, and how they eat has to do with also coffee and tea consumption and all that."

and the same was confirmed by respondent no.3:

"They're still removed from their family and friends in a different time zone and {...} so that we know that if seafarers do have a problem, it may be more difficult for them to access support and that's assuming that they don't have you know concerns within their company employment about confidentiality. There's lots of we talked to seafarers and one of their number concerned of raising a health issue mental health or otherwise is, you know, the fact that it may risk their employment status."

4.9.2 Perception of wellbeing

All respondents showed noticeably clear understanding of the concept of wellbeing and its importance at workplace. The majority pointed out that wellbeing had the same significance for seafarers as it had for other occupations. It was mentioned that a balance of work and rest and social support determined the quality of wellbeing. Some stakeholders also associated wellbeing with respect to seafarers. Respondent no.6 described wellbeing as an equilibrium of work and rest:

"So, it's an equilibrium. It's a balance of work and rest. Social support. That is noticed through the crew, through friends, family at home and through good exercise and healthy diet."

while respondent no.1 considered seafarers' wellbeing as no different to any other occupational wellbeing: *"Yes, it is in one word and it is an interesting and challenging subject at sea. It can it be managed? Yes! Is it being managed? No! Okay, my understanding of word wellbeing, okay there is absolutely no difference between seafarers or any other occupations. We all are human beings and we all have the same needs. I hope this answer is ok to whatever the definition you will use. {...} So it's very difficult for me to brush with one word in one sentence. **The most important that I'm trying to say is that the seafarers are absolutely no different to the others we are all the same human beings.**"*

Respondent no.2 underlined the challenges the seafarers face at sea being away from normal access to support from family and friends:

"I think that the biggest difference for seafarers with the other people who are working on shore is that they are out of home for a long time and they have been out of home for a long time and the connectivity and access to information is limited ..recreational facilities as well. Let me get so in that way the people who are living on shore have ways and means to de-stress

themselves, but seafarers because of their working nature and the working condition are out of the world..more vulnerable to mental health issues because of the nature of the condition of the work."

Respondent no.8 mentioned the classical definition of wellbeing, where he combined all of its dimensions to give a more explicit definition:

"The wellness of Seafarers is an instability through the lens of holistic approach which will include physical wellness, emotional Wellness, social Wellness intellectual wellness and religious Wellness. So where the physical wellness is quite understandable to everyone emotional Wellness is not..you know when I speak with People about mental health and emotional Wellness for most of seafarers it seems to be you know, a sort of a program which has been set up by you know.. by default. While when we start talking about what are let's say mental health issues or disorders and normally people would consider or would start thinking about like Joker and when we start talking about for instance depression or alcohol abuse or coffee and abuse or smoking too much not quite many do understand that it might be a consequence or usually it's a consequence of poor mental state."

The medical consultant, (respondent no 11) also emphasized the importance of the unity of its dimensions in order to grant an individual a wellbeing of good quality:

"If we put a wellness package together for, me Wellness is more about physical and mental health and it's respect for the worker. It's things that you can't really quantify and on that Wellness side of things. I find that people are better placed to manage their own Wellness as long as things are in place for them to access rather than being sold products, you know. There's a lot of technology that people are selling to say look we can track your your mood and we can track your physical health and your mental health but I will not to be tracked. They just want to have access to I don't know things like decent fitness equipment or much better connectivity. {...} So they can get online and spend time with their family a lot of what we see. {...} I find that a lot of people have issues with connectivity and when you talk to senior seafarers, you know masters, chief mates, they say, oh my crew just seem to spend all their spare time straight on their phone looking at you know, and I don't think it's that they want to spend all their time on their devices. I think it's because connectivity is so poor that they're just trying to Keep up with what's going on. These messages would go through faster. They get a responses faster. I don't know that's just from my perspective. Anyway, that's that's how it feels. Sometimes that's a longer definition."

Participant no.3 elaborated that seafarers' wellbeing was somehow determined by lack of direct support while out at sea and away from family and friends: *"Seafarers may be exposed to general conditions within their work and then they're living and you know other factors that may lead ..that may contribute to poor mental health, because on the one hand, you know as humans they may have as much of a chance as anyone else with suffering from mental health issues. They may have more of it because of whatever condition you know, whatever they're vulnerable to in their particular company. They're working being impacted by various of the different factors {...}, but the fact remains that they will always find it more difficult to access support because you know, even a vessel with really great communication, they're still removed from their family and friends in a different time zone."*

while the respondent no.7, (psychologist) further shared her view that wellbeing was more than survival, rather a good balance between work and off work time: *"I think generally well-being is about it's not just about surviving. It's about thriving, so it's something about saying how does this person live? Well and living well means a balance between work and time off work. What's interesting about the seafaring is that people are often very focused on their work, they may have less and less time off work. They may be on shift. Does that mean that they hardly see other people? So it's really about how do you find that time outside of work to rejuvenate yourself and to relax under the structures that are created by small teams with long voyages, difficulties with accessing ports."*

Other important views shared by stakeholders concerned the importance of rest for wellbeing. The attempted suicide by a seafarer due to lack of sleep was mentioned by the respondent no.8:

"I recently had the case where the guy committed suicide{...}. They never knew that lack of sleep or inability to sleep properly can be symptom of serious mental health disease so then they knew that the guy didn't sleep well for six or five days and then he committed suicide. If they knew they would pay attention and probably in this case, they could stop him from committing suicide. So sleeping deprivation can cause a suicide as well."

Respondent no.11 also highlighted the importance of rest by stating that mental and physical health were strongly determined by a good quality sleep:

"Yeah, I think it directly affects everything, you know, if you're tired, your mental health is poor, your physical health will be poor. Working safely is going to be affected. Your ability to

work as part of a team or your ability to get on with your crewmates is going to be affected. Everything gets affected if you don't sleep properly. So I'm a big advocate for good quality sleep."

Respondent no.4 mentioned the negative effect of both excessive and too little sleep on mental health and wellbeing:

"I mean if you look at the literature and research and I think it's a common known fact that within mental health and sleep, either too much sleep or too little sleep severely influence your mental health. {...} one of the things that you can actually do proactively to ensure your own mental health is to watch sleep length patterns. So it's definitely got an influence on mental health and as a result your total well-being."

4.10 Response on policy and regulations addressing wellbeing

4.10.1 Availability of the policy and regulations

The availability of policy and regulations addressing seafarers' wellbeing was confirmed by 86.9% of respondents³⁶. Only in the view of 13.12% of interviewees were neither of those implemented by companies, which did not fully monitor seafarers' wellbeing. Respondent no.3 expressed the view of policy availability in a very limited form:

"In most cases companies don't have policies and some companies again have. And I would say in general know there's a few companies that have mental health policies. For example Wellness is part of their policies, but it's very limited. They have it differently. I think as we move to its stage Wellness is more and more acknowledged as a real part of the industry."

And respondent no.5 addressed the responsibility of the company to have established sufficient and clear policies addressing acceptable and unacceptable norms onboard:

"the company should have policies. The regulations are just those a framework, international framework. The company itself should have its policy on alcohol, its policy on disciplines, its policy on what's acceptable and what's not acceptable, {...} Good responsible employer will have those things a fly-by-night employer will just ...well, then just don't going to do it properly"

³⁶ See Appendix 11 - Nodes assigned to the group 'Response on policy and regulations addressing wellbeing'.

but a good responsible employer will have all those policies in place what is and what is not acceptable on board.”

Respondent no.1 mentioned that the existing policies were integrated with the safety system, not solely addressing wellbeing: *“I will say 90% of them have a policy on wellbeing integrated into the safety management system.”*

Concerning regulations, most participants acknowledged the MLC 2006 and STCW Conventions as the main instruments governing seafarers' wellbeing: *“Yeah okay, obviously Maritime Labour Convention 2006 this is something that everybody would give the same answer about but I think also STCW convention very importantly with its 2010 amendment in Manila and I was part of the delegation as an NGO and we failed to regulate 40 hours a week so we are still on 90 hours a week. Basically we are working twice or 220% hours at Sea than anybody works outside the maritime industry. {...} and I think that's STCW or a very few people appreciate that it has anything to do well-being but it does a lot with well-being.”*

In addition, respondent no.5 added the SOLAS convention as another instrument on wellbeing: *“So basically I would mention Maritime Labour convention 2006 then stcw convention and also SOLAS convention.”*

4.10.2 Effectiveness of the policy and regulations

Only thirteen percent of the respondents believed in the effectiveness of the existing policy and regulations. The effectiveness was associated with the seafarers' compliance with the hours of work and rest and how well they were enforced by companies onboard. On the other hand, respondent no.1 pointed out that regulations were in place, but they had nothing to do with wellbeing:

“So the issue here really is that these regulations were invented and are being complied with but I am afraid sometimes it has nothing to do with well-being of Seafarers. Let me explain this, STCW says that seafarers have to rest 77 hours per week {...} they are not really into the well-being of seamen, because {...} if we believe that if we have access to Internet is positive then MLC says shipowners should provide access to Internet, it does not say you have to adjust, it gives recommendations. So, I'm not also convinced that internet is actually good with this.”

Moreover, respondent no.5 associated effectiveness with the responsibilities which the flag states and shipowners have to enhance seafarers' wellbeing based on the consultation they receive from the IMO and also with unforeseen circumstances which could easily cause issues:

*"I think Probably the regulations we have are the best you can have which is a requirement that places it firmly on the flag State. Many do it in consultation with the shipowner and a very quite good guidance document of IMO which sets out the kind of considerations a flag state to take into account when doing its obligation. {...} So less to set the minimum safe manning. So I just put it into that context because **you can have a best legislation in the world and then you can have something coming from left field that nobody is forsaying which can completely turn the best nations to cause you problems.**"*

4.11 Recognition and reasons for adjustment of work and rest hours

A hundred percent of the respondents acknowledged the adjustment³⁷ made to the reports of work and rest hours by seafarers.³⁸ Respondent no.2 addressed the adjustment as the main issue in the industry:

"It's a big issue {...}.

- what do you think about it?*
- we have hundred and forty inspector, you know... so they visit the ships regularly and routinely but the same time when they get phone calls from them {...} not recording the hours probably is an issue. So sometimes they work 14 hours, but they have to like 12 hours or sometimes some kind of ship carry double bookkeeping. So this is still an issue.... it's not gone away."*

Respondent no.6 gave his opinion about "falsification" from his own experience as 60% of the ships inspected by him were found to have adjusted reports:

"60% of the vessels I've visited yes..I mean, I've always heard not that many. I mean probably about eight hundred ships. It's not a huge number. It was about eight hundred ships and all about 60% of them."

³⁷ See Appendix 12 - Nodes assigned to the group 'Recognition and reasons for adjustment'.

³⁸ Adjustments mean falsifying the records in order to avoid non-conformities, observations or ship's detention by such as port state control or vetting inspectors.

Respondent no.10 from a ship management company regretfully mentioned having experienced problems because of adjusted reports:

"Okay, regretfully, I've seen it and I have not agree dwith it. And I've had lots of issues with it."

Responses from 42.7% of the participants confirmed that, from their knowledge and experience, adjusted reports had not been verified further at the company, and 57.3% confirmed they had been. It is interesting to emphasize respondent no.3's point of view, where effective conversation between managers and ship with a professional guidance would avoid such "falsification":

"Well, I'm sure that a lot of them could do with more professional guidance in how to basically have effective conversations between on board and shore management as well that you know leads to much more efficient working."

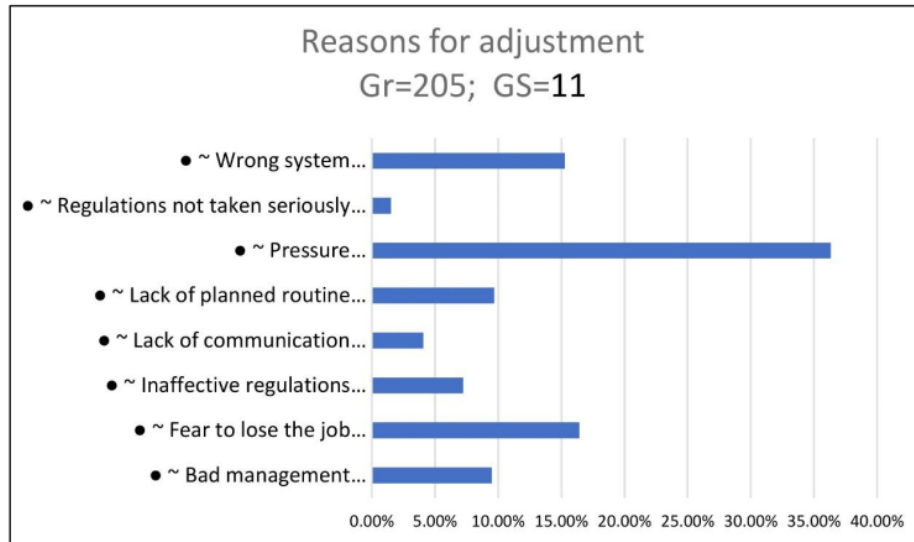
Respondent no.2 confirmed such adjustments and blamed a tight work schedule as the main contributor to it:

"I cannot say they don't but I think good companies don't follow this unwanted procedure and yes, some of them still do. There are companies which still practice this illegal method of double bookkeeping or are not keeping the right time schedule enough of hours of work and so on. Some of them still do."

The respondents mentioned various reasons for adjustment as per Figure 16.

Figure16

Reasons for adjustment to the reports of work and rest hours.



Pressure, fear of losing their job and wrong system of reporting were the most prevailing reasons. Respondent no.11 explained from her experience that the seriously enough to question the issue of adjustment:

"But I know that I've worked with a lot of people who are fudging their numbers on not recording accurate hours of work and rest because of the pressure {...} and there are definitely certain sectors where this is more of a problem than others that I've come across. Sure other people have different experiences, but they you know, {...} they laugh at you and go what hours of work and rest I'm saying but it's a requirement. It's a regulation saying yeah, try working this job and getting your hours of work and rest. I think it's a good regulation, but I don't think it's taken seriously by everybody."

Meanwhile respondent no.3 mentioned the influence of the company culture and work ethic as the main factors leading to such adjustments:

"I think that's really tied up with company culture because I think you know somewhat surprising about the seafarers being under pressure to falsify hours as it's not always the companies at the bottom end of the market that you'd expect it. Obviously, that's where the

real problems lies, but I think there's a kind of work ethic issue that the anxieties around not getting work completed that leads to pressure from above to make sure that everything is done."

Respondent no.1 further mentioned the wrong system of reporting, which was subject to changes in order to avoid such violations and, even more importantly, he mentioned seafarers' fear losing their jobs in case of reporting excessive work and rest hours: *"I also would love to say that the system is wrong it is based on the same applications like any driver should report to the police station every time he violated the rule. So in that situation you're supposed to report correctly then you have done something wrong ..this system is wrong, it's not going to work and we need to have another system. {...} Personally would never report anything wrong way but I had situation I worked in a very good company all my life we're reporting would not get you in trouble. I mean right reporting without adjustment. I'll explain more I would not expect the master of a container ship to report the truth knowing that as soon as he reports the truth then there are 20 of the Masters for waiting for the job and the owner can say I would like to take this one and he would be keeping losing people until he finds somebody who will be reporting whatever he wants them to be reported in an adjusted way. {...} The reason that they keep adjustment of work and rest hours is that we have too many seamen they think that if they report true they will be fired, they have never been fired but they just think that way."*

4.12 Recognition of lack of manning and increased workload

Lack of manning and excessive workload³⁹ were acknowledged by 100% of the respondents as contributors to fatigue. Respondent no.5 addressed in her comment the flag state responsibilities towards establishing such minimum levels of manning: *"So I think the hours of work and rest requirements and MLC and STCW, I think are the kind of regulations you refer to but of course, there's also safe manning requirements and SOLAS chapter 5 and it's down to the flag state to establish the minimum safe Manning level."*

³⁹ Nodes assigned to the group 'Recognition to lack of manning and increased workload'.

The same respondent emphasized an interesting point, where the communication between the master and the shipping company was an important determinant of manning levels:

"The idea is that It was understood that sometimes there can be some kind of disconnection between ship and company and they don't necessarily see exactly the situation that you faced on board and the idea with this online version where you have all these metrics and graphs updated that fleet manager can view and not the office of the company to ensure, as to allow the company to quicker identify that we potentially need more persons on board that ship or over to make changes to sort of the manning strategies of the fleet is a result of this information."

Ship management companies' control of budget was also mentioned as the main influential factor on decreased manning levels and increased workload.

4.13 Recommendations on further improvement

Different recommendations⁴⁰ were given by participants for further improving seafarers' wellbeing. They mentioned aspects such as:

- Ship management companies paying more attention to seafarer's wellbeing,
- Healthy lifestyle,
- Mentoring,
- Crew engagement and participation in various safety related meetings in the company,
- Policy modification,
- Crew training on wellbeing,
- Raising awareness,
- Avoiding fake news forming the various beliefs among seafarers,
- Good socializing,
- Job security,
- Open culture and
- Transparency.

⁴⁰ See Appendix 14 - Nodes assigned to the group 'Recommendations for further improvement'.

Chapter 5 – Discussion

5.1 Introduction

This chapter aims to discuss the main findings in order to identify answers to the research questions. The findings discussion will be supported with the material from the literature review as appropriate in order to strengthen the quality of the study.

It is interesting to mention that seafarers' happiness is regularly measured by the Mission to Seafarers, a welfare charity mission and a happiness index to monitor and benchmark seafarer satisfaction levels is offered. The latest report shows that the index dropped from 6.30 in quarter 1 2020 to 6.18 in quarter 2 2020⁴¹. Delayed repatriation is named as the main reason caused by COVID-19 pandemic circumstances. In general, all other pre pandemic reports indicate that factors causing deteriorated wellbeing as discussed below, remain constant over the years.⁴²

5.2 Excessive workload, lack of sleep and shore leave as major contributors to deteriorated wellbeing

As the study reveals, a majority of the seafarers find themselves unhappy at sea due to various factors, but most importantly excessive workload, lack of sleep and lack of shore leave are those which have the most adverse effect on their wellbeing.

⁴¹ Seafarers' Happiness Index – Quarter 2 / 2020 from <https://www.happyatsea.org/news/article/q2-2020-seafarers-are-at-crisis-point/>.

⁴² All other reports can be obtained from <https://www.happyatsea.org/news/>

Analysing the data, lack of manning emerged as the causative element to these factors further leading to severe fatigue, stress and anxiety.

The first interesting point to emphasize is that the industry is much more aware of the reasons contributing to the deterioration of seafarers' wellbeing than the seafarers themselves. This is supported by the results chapter, where the number of the factors mentioned by seafarers is 50% less than those mentioned by the stakeholders. Comparing Figure 11 – 'main factors causing fatigue by seafarers' with the Figure 15 – 'factors causing fatigue by maritime stakeholders', stakeholders exceed seafarers by 13 mentioned factors.

The next point concerns excessive workload and lack of sleep, which are found to be the most influential elements on wellbeing. This is confirmed by most of the seafarers and stakeholders, although further mentioned factors by them do not come in line with one another.

Seafarers mention lack of sleep as the second most causative factor to fatigue, followed by sense of responsibility (sometimes influenced by pressure from the company), work schedule and being away from family.

Meanwhile, industry stakeholders recognise the stress from being away from the family as the second most causative factor, followed by fear of losing the job and then lack of rest (and not mentioned as lack of sleep).

Analysing the reasons that exactly lead to such excessive workload and lack of sleep, declined level of manning emerges as the most prevailing core issue among seafarers on all types of ships. This is followed by issues, regardless the ship owners' influence, stemming from commercial operations. It is interesting to note that the seafarers, more than the industry itself, have mostly identified this issue.

The stakeholders tend to give more explanatory background to this issue rather than directly addressing why reduced manning levels exist onboard the ships.

For example, respondent no.5 (international trade association) firstly refers to the flag states' obligations in setting the minimum manning levels for the ships operating

under their jurisdiction, and then to the ship masters to raise the question to the shipowners:

"I think there's always going to be unforeseen circumstances and overriding operational conditions where sometimes the master may need to just say, you know, the current support working Arrangements, you know, that's over for a day or so until we get back running again in the engine room, or we've now been given instructions we call it to quick ports in succession all around European coastline or whatever."

This finding can be supported by the trade union's important arguments related to flags of convenience (FOC).⁴³ It addresses the FOC as the inception of the issue. Ship owners use this opportunity for their favour in terms of preserving minimal regulations, focusing on more business with as few financial expenses as possible and, most importantly, obtaining freedom to employ cheap labour (ITF, 2020). This leads to the possibility of reducing the level of manning onboard ships with seafarers' deteriorated wellbeing and increased workload.

This gives a tangible ground to the belief that shipowners have obtained some kind of freedom in handling crew members with the so called 'hire and fire' regime, which would reduce their operational costs. Technological advancement further supports crew reduction, leading to seafarers' exhaustion and stress (Exarchopoulos et al., 2018).

The same attitude from companies has been noticed with regard to other factors adversely affecting seafarers' wellbeing. Shore leave, which is so important for seafarers' social wellbeing is not always granted to them. Spending most of the time onboard causes seafarers' mental, physical and social distress and, as the results indicate, the ship's fast turnaround and long voyages have not always been the main reasons. Being fatigued and with lack of sleep, seafarers tend to stay onboard during off duty hours to have some sleep and rest to get ready for their work-related duties and obligations. In other words, sometimes decreased motivation has been revealed.

⁴³ 'A flag of convenience ship is one that flies the flag of a country other than the country of ownership' - <https://www.itfglobal.org/en/sector/seafarers/flags-of-convenience>

As discussed in Chapter 2.2 – regulatory constants affecting seafarers' wellbeing, MLC 2006 clearly states that seafarers shall be granted shore leave. But this remains far away from the reality. The ISPS⁴⁴ Code is another growing hampering factor in some ports, which keeps seafarers onboard the ships. Even without the ISPS Code, fast turnaround cargo operations will not be stopped as commercial pressure always prevails over seafarers' wellbeing. Nevertheless, putting these facts aside, the study has revealed that there is no such policy developed within the companies that would address the importance of seafarers' shore leave (Exarchopoulos et al., 2018).

Feeling isolated or lonely has been mentioned by almost half of the respondents as experienced sometimes, and again, in this case, lack of shore leave has emerged as one of its causative factors, and contract duration as another. As Figure 10, 'Contract duration: data from all seafarers', shows almost half of the respondent seafarers are employed with contracts longer than 4 months. This has been especially relevant, in most cases, to those from the Asian region. Their contract duration sometimes exceeds even 9 months with relatively short leave duration. The trade union sees effects of FOC (as explained above) again as the major influential element for such long employment durations.

The finding about the effect of long contract duration can also be supported with the report of project MARTHA⁴⁵ (on seafarers' levels of sleepiness and psychosocial issues), which acknowledges the same. Fatigue is a major issue for seafarers and has a long-term adverse effect on physical and mental health. Long employment contracts, night-time watch and vessel design have been named as the main contributors to decreased motivation and insomnia. "Motivation decreases the longer seafarers are away from home. This has important implications for safety, as it may be a significant underpinning root cause of phenomena such as complacency, short cuts, and not following procedures" (Barnett et al, 2017).

⁴⁴ ISPS – International ship and port facility security code is a set of measures to enhance the security of ships and port facilities.

⁴⁵ Project has been conducted through an international partnership of researchers and industry professionals with the final findings concluded in 2017. The main researchers were: The Centre for Maritime Health and Society - University of Southern Denmark, Dalian Maritime University, Intermanager, Stress Research Institute - University of Stockholm, University of Southampton, Warsash Maritime Academy – Southampton Solent University.

It is important to mention that leave duration, which is so essential for wellbeing, has also been influenced by companies. Fifty percent of the respondents report short home stays before re-joining the ship again. Reasons revealed are various, but most notable are fear of losing the job, pressure from the company and a lack of seafarers of some ranks, especially high rank officers.

The study further indicates that not all ships are equipped with the necessary recreational tools as required by MLC 2006. Some seafarers do not have an opportunity to go to the gym because of its unavailability; or some try to make gym equipment onboard by themselves. Seafarers mention a decreased desire to socialize onboard with others during off duty periods because of being fatigued and preferring to go to sleep instead. This is another clear ground to believe that ship owners' interests in controlling the expenses take precedence over the interests of enhancing seafarers' wellbeing.

It is important to mention that, in most cases, all the factors discussed above have been found interconnected as chain links, one leading to the other.

5.3 Variability in awareness of the concept of wellbeing

A majority of respondents, both seafarers and maritime stakeholders, were generally found to have awareness of the concept of wellbeing but at differing levels. It is important to emphasize that some seafarers were unable to demonstrate a good understanding of the full concept of wellbeing despite being affected by deteriorated conditions in workplace and vice versa, others could elaborate the concept of wellbeing very well not being fully affected by its determinants. However, in general, maritime stakeholders' awareness of the concept of wellbeing is much higher than those who are heavily engaged in seafaring.

The results further indicate that seafarers' physical, social and mental wellbeing is affected differently onboard of different types of ships. Hence, this supports the idea

that the nature and volume of work carried out onboard ships prompts different levels of wellbeing awareness among seafarers.

It is interesting to note that seafarers associate their perception of wellbeing mainly with fatigue and with all the conspicuous elements experienced almost daily or throughout the voyage. When discussing their general wellbeing they rarely identified it through its main three dimensions as explained in chapter 2.1 – dimensions and definitions of wellbeing.

Seafarers with different ranks give different significance to the notion of fatigue, mainly depending on the level of their responsibility and volume of workload. Most notably, deck officers recognize fatigue with more significance than masters. This is explained by the lack of additional officers who would facilitate avoidance of the 6h on and 6h off watchkeeping system in ports, and sometimes underway, when the chief officer is heavily engaged with other obligations and not able to keep watch on the bridge.

Meanwhile, maritime stakeholders' perceptions captured a more holistic understanding of the concept of wellbeing with all its dimensions, particularly implying the importance of the equilibrium of work and rest as a challenge at sea. All respondents with a strong voice in the industry have a clear perception of wellbeing and how its dimensions are affected in seafarers.

5.4 Existing regulatory instruments not fully governing the concept of wellbeing

The study shows that the only instrument dealing with seafarers' wellbeing is MLC 2006 and the only regulation addressing fatigue mitigation is the work and rest hours. As per respondent no.1 (international trade association for ship management), the maritime industry has achieved much more in terms of regulatory regime than any other mode of transport, but the question is how effectively they govern the concept of seafarers' wellbeing:

"Maritime industry is leading in terms of these regulations compared to other Industries in the world. We have Maritime Labour Convention, let me explain what I mean. We are comparing

*industry, which is international, there are very few international industries in the world which are not international. Minors in Ukraine are mining only in Ukraine. Minors in Czech Republic are mining only in Czech Republic. The industry of Aviation is the industry close to the maritime and they are working internationally employing international companies, working with the different nationalities. They do not have MLC and they are envious; they are jealous. They would love to have something like Maritime Labour Convention in the aviation. We are very critical both you and me because we are in this industry and we know that we can go very far and this is true, but if you set out from the shipping industry and look at the other industries like textile for example farming.. they do not have anything like MLC. There's a huge exploitation in fisheries and so on so forth. {...} My answer is shipping industry does very well. **Another question is room for improvement ...huge ...absolutely huge but we have to recognize that we have already achieved a lot.**"*

The figures from the results chapter indicate that the awareness of seafarers and stakeholders of these instruments is quite solid. However, it is interesting to mention that their effectiveness in governing wellbeing onboard the ships has been questioned by most of the respondents. These instruments have been found to be ineffective, inapplicable, not fully monitoring seafarers' wellbeing and not taken seriously. Reasons imply either insufficient implementation of instruments onboard ships or that such instruments are integrated with the ship's safety system and not established independently. As the respondent no.1 explained:

"In terms of well-being I think it is an issue, which is sometimes not taken seriously by everybody because we think it is part of life, but mental health is an issue that needs to be addressed. So, I think MLC 2006 in some cases is implemented very well in some countries, but when it comes to well-being issues and when I say well-being it is not only physical health, but also including mental health, I think we need some improvement."

This finding can be well strengthened by another study in the industry, which reveals that, first of all, seafarers' wellbeing is not completely defined by any regulatory instrument and, secondly, the existing MLC 2006 does not adequately responds to seafarers' wellbeing in a fast changing maritime industry. The Convention has been found to insufficient address the issues related to seafarers' labour rights and no

improvements are expected unless the gaps in the Convention are filled in subsequent amendments (Exarchopoulos et al., 2018).

5.5 Adjustments to reports – false perception to seafarers' wellbeing

It seems that as long as the work and rest hours' records⁴⁶ have no non-conformities seafarers' wellbeing has not been affected adversely in a way that they have not worked excessively and have enough sleep. But the study shows that it is not the case.

The research has exposed that most seafarers adjust their reports because they work excessively long hours and sleep less than regulations require. Lack of manning appears again as the root cause of such a violation. However, other causes emerge such as fear of getting observations by major ship inspections, or fear of losing the job in case seafarers maintain unadjusted records.

The study conducted at WMU about such adjustments corroborates the present research's findings. As the flag states, port states and shipping companies disregard such violations, seafarers find adjustments to be a low risk option and accept unfavourable work conditions (Baumler et al., 2019).

The research leads to conclude that adjusted reports cause the false interpretation of seafarers' wellbeing concealed from reality. This means that as long as seafarers remain submissive to such kind of 'business first' culture - further covering their lack of sleep and unfavourable working conditions through falsifying the reports, the industry will remain silent and satisfied with the way the system works.

⁴⁶ Seafarers' keep records of their work and rest hours as per the regulations and a designated officer prints the records with the interval as required. Further seafarers sign the reports as a main legal document for inspections.

Chapter 6 – Conclusion and recommendations

6.1 Conclusion

Seafaring is a truly unique occupation unlike any other in terms of its importance for worldwide trade and still remains attractive and popular for its adventurous nature and high salaries. On the other hand, the challenges associated with it are tremendous and not many can handle them.

Successful performance of ships without accidents fully depends on the seafarers' wellbeing. Their physical, mental and social health are of paramount importance. How well are they rested? How good is the nutrition system onboard? What about their social life? Availability of the answers to these and many other related questions should create a clear picture of their wellbeing. However, the study has revealed there are many gaps in these answers at both industry and seafarer levels. Subsequently, seafarers' wellbeing in the maritime industry is not perceived in its fullest concept.

Shipowners' freedom about handling crew with a 'hire and fire' regime gives seafarers' few options to stand against sub-standards. With the fear of losing their jobs, a majority of them have to agree to sign long employment contracts and work in the most unpredictable and severe environments. They still experience tremendous pressure from workload and lack of sufficient rest with limited social life. All these conditions make their wellbeing questionable and lead to long lasting adverse effects on their physical, mental and social health.

The lack of enforcement and lack of effectiveness of existing instruments, which do not regulate the concept of seafarers' wellbeing completely, make the situation even worse. MLC 2006 turns out to be incomplete in terms of regulating the concept of

wellbeing. The only regulation addressing fatigue and work and rest hours fails to work properly. Its only mission seems to create a positive impression about seafarers' wellbeing for ships' major inspections. Shipowners seem not to initiate actions directed to improving wellbeing standards onboard their ships. Even worse, they use each opportunity to reduce expenses for successful operation of the business.

The wellbeing awareness level in the industry seems to be incomplete. Seafarers are not able to address all the issues pertaining to their deteriorated wellbeing and various organizations tend to raise awareness of some dimensions only, most notably mental health. Mental health has become a kind of measuring tool covering the whole concept of wellbeing, perfectly suited to the industry's agenda and stigmatising seafaring as a profession (Szymanski, 2019).

6.2 Recommendations

The following must be considered by governments, shipowners and other maritime stakeholders in order to facilitate improvements to seafarers' wellbeing at sea:

- The concept of seafarers' wellbeing should obtain wider recognition rather than being referred to by one of its dimensions only, such as mental health.
- The awareness of wellbeing must be raised in the industry and among seafarers through training and proper education.
- Provision of promotion programs of wellbeing should be obligatory for every shipping company, delivering better awareness and training tools onboard their ships.
- A substantial amendment to the MLC 2006 convention must be made to fully regulate the concept of wellbeing covering all its dimensions.
- The effectiveness of the work and rest hours' regulations on governing seafarers' fatigue should be questioned and the necessary changes must be initiated.
- The reduction of manning levels should be re-examined.
- The policy of maximum length of employment contract, minimum leave duration and shore leave should be implemented and based on seafarers' wellbeing.

- The industry should impose more control measures for shipowners on how they provide a healthy wellbeing environment for the seafarers they recruit onboard their ships.
- The seafarers' voice should be strengthened in the industry through their engagement in various activities, raising their awareness and providing much better and well-deserved working and living conditions onboard the ships.

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Appendices

Appendix 1: Sample for semi-structured interview with guiding questions – seafarers.

Synopsis of the seafarers' wellbeing.

A qualitative research based on the data derived from seafarers and maritime stakeholders.

(Seafarers)

Semi-structured interview – guiding questions.

Part 1 – Terms of employment and work routine

1. Identification.

1.1. -Full name/ What is your nationality / Age / Gender /Marital Status / Education level / COC / Experience in years or months?

1.2 -What was your last position onboard? / Years or month in last position?

1.3 -Sailing background: name of the company / Type of ships / Flag / Crew nationality / Sailing area / Type of cargo handled.

2. Contract and vacation.

2.1 -What was the average length of your contracts at sea in recent years? How long is your vacation period at home?

2.2 -Does your company provide your relief on time after the completion of your contract or do you usually experience prolonged stay onboard awaiting a reliever?

2.3 -Do you have a day off in case having a long journey on the way joining the ship?

3. Working time and overtime.

3.1 -How many hours do you work per day onboard in average?

3.2 -Do you have official days off when onboard the ship? How many days a week?

3.3 - What is company's official watch schedule?

3.4 -What is your daily schedule of work onboard the ship?

3.5 -Apart from fixed, have you been paid an overtime? (extended hours to increase salary).

Part 2 – Awareness of fatigue and its causative factors

4. Fatigue in shipping.

4.1 - On a scale of 1-7, how significant a problem do you think fatigue is at sea?

- 1 – Not at all a problem.
- 2 – Slightly important problem.
- 3 – Somewhat a problem.
- 4 – Moderately important problem.
- 5 – Very important problem
- 6 – Extremely important problem.

4.2 - What kind of fatigue do you experience mostly? Mental? Physical? Emotional (exhaustion)?

4.3 - How often have you experienced fatigue when onboard?

4.4 - In your opinion, what are the factors causing fatigue at sea?

4.5 - What do you think you could do to avoid fatigue?

4.6 – What do you think companies could do to avoid/deal with the fatigue issue?

4.7 – What do you think industry could do to avoid/ deal with the fatigue issue?

4.8 – Which stakeholders in the industry should be involved in the industry to deal with fatigue aspects?

4.9 - Do you think fatigue has any effect on your decision-making and health?

4.10 - On a scale of 0-7, how much do you think fatigue affects your mood / wellbeing?

- 1 – Not at all a problem.
- 2 – Slightly important problem.
- 3 – Somewhat a problem.
- 4 – Moderately important problem.
- 5 – Extremely important problem.
- 6 – Very important problem.
- 7 – Extremely important problem.

4.11 - How does fatigue affect personally you or other crewmembers onboard?

4.12 - Do you think fatigue may affect your own psychological state?

4.13 – Can you tell me when did you feel fatigued last time and how did you deal with it? what were the consequences?

Part 3 – Determinants of wellbeing

5. Factors causing negative influence on seafarers' wellbeing.

(Answers based on 5 points scale:

How often? 1. Always. 2. Very often. 3. Sometimes. 4. Rarely. 5. Never.

How does? 1 – does not affect me at all. 2 – Slightly affects my wellness. 3 – Somewhat affects my wellness. 4 – Moderately affects my wellness. 5 – Extremely affects my wellness.

5.1 -How often have you experienced stress and anxiety when onboard? What are the causing factors and how do they affect you?

5.1.1 – How often do you experience lack of sleep onboard? Why?

5.1.2 – In average how many hours do you sleep when underway and in port?

5.1.3 – How does lack of sleep affect your wellbeing?

5.2 -How often are you engaged in various recreational activities onboard, such as gym? How do they affect you?

5.3 How often do you manage to socialize with other crewmembers beyond working hours? What are the causing factors in case if never? How does this affect you?

5.4 – How often have you felt isolated, lonely onboard? What are the causing factors? How does it affect you?

5.5 – How often did you have shore leave in your last contract? How does it affect you?

5.6 – How often do you have access to internet onboard or calling your family? How does it affect you?

5.7- How often have you experienced lack of energy due to bad food? How does it affect you?

5.8 – How often do you keep watch pattern 6h on and 6h off? How does this affect your wellness?

5.9 – Have you ever been bullied onboard? How often? If yes, how did it effect your wellness?

5.10 – How does the stormy weather affect your wellbeing?

5.11 – How does the ship's vibration and noise affect your wellbeing?

5.12 – How does the bridge; engine room lay out effect on your wellness? Do you think they affect you in any way?

5.13 – How does the nighttime working environment effect on you?

5.14 – How does the prolonged contract effect on your wellness?

5.15 – How does the commercial pressure from ship operators and managers effect on your wellness?

5.16 – Undergoing ship's inspections (Vetting, PSC, Flag State, Class, Company visitors, any other) how do they affect you?

5.17 – Have you ever experienced lack of mentorship / guidance onboard? If yes, how did it affect you?

5.18 – How does the excessive exposure to various equipment onboard effect on your wellness?

5.19 – How does the bureaucracy (Paperwork) effect you and How much does it affect your wellness?

Part 4 – Awareness and response to regulations addressing wellbeing'.

6. Regulations governing seafarers' wellbeing.

1. Are you aware of the international regulations on work rest hours and related instruments to address fatigue?
2. How well do you know basic legal requirements of work/rest hours?
3. What is your opinion on current regulations?

Part 5 – Practice of adjustment work and rest hours

7. Recording practice onboard / Quality of records and adjustments.

1. Do the crew use paper or electronic/software reporting systems onboard?
2. How often do crew report their work/rest hrs to the company – weekly/monthly?
3. Does the company monitor reporting?
4. Have you had cases of adjustments in reporting of rest/work hours by crew?
5. How often have the adjustments been done per month?
6. What were the contributing factors leading to adjusting the work rest hours?
7. What would happen if you left them unadjusted?
8. What do you think about PSC inspections relevance and quality related to work and rest hours?

8. Awareness of recording adjustments

1. Is the Master / Company aware of the rest hours recording adjustments?
2. Have you (or smbd on your behalf) ever reported to the company on violation of work rest hours? If yes, what was the response?
3. What actions were taken by onboard management team to deal with violations?
Was the support from the company witnessed? In what way?
4. Have you ever approached the Master or the company to report or to complain on frequent violations of work rest hours?

Part 6 – Workload and inadequacy of manning levels.

9. Manning level and workload and recommendations

1. What recommendations can you offer to comply with work rest hours onboard in the best possible way and to reduce violations?
2. What do you think about manning level onboard of your ships?
3. Have you ever witnessed the Master or assigned senior officer strictly prohibiting adjustment of work rest hours onboard?

Appendix 2: Sample for semi-structured interview with guiding questions – Maritime stakeholders.

Synopsis of the seafarers' wellbeing.

A qualitative research based on the data derived from seafarers and maritime stakeholders.

(Private Sector / Shipping companies)

Semi-structured interview – guiding questions.

Part 1 – Identification and background

Identification

Full name:

Education and degree:

Name of the company / Organization:

Designation / Role in company:

Years in current position:

Background experience (particularly specific to maritime industry):

Background

1. What is the number of seafarers in your fleet? (*approximate good enough*)
2. What are the nationalities of the seafarers you employ or deal with?
3. Which flags do the ships in your company sail under and what is the area of sailing?
4. Are your seafarer contract periods and vacation periods fixed or are they random?
5. What is the contract duration for the officers and for the ratings?
6. How is the contract duration determined – by nationality of the crew or by rank etc.?

Part 2 – Response to fatigue and wellbeing in maritime industry

Seafarers' wellbeing

7. How do you define the seafarers' wellbeing?
8. In your opinion, what are the causative factors of fatigue at sea?
9. On a scale of 1-7, how significant an issue do you think fatigue is at sea?
 - 1 – Not at all a problem.
 - 2 – Slightly important problem.
 - 3 – Somewhat a problem.
 - 4 – Moderately important problem.
 - 5 – Very important problem.
 - 6 – Extremely important problem.

Part 3 – Awareness of regulations addressing wellbeing

10. Which regulatory instruments do you recognize addressing the seafarers' wellbeing at sea?
11. Are you aware of the required hours of work/rest as set out in the different regulations and guidelines to prevent and control, monitor and enforce against fatigue?
12. What do you think about effectiveness of these regulations, do they fully address / monitor seafarers' wellness at sea?
13. Why do you think they are effective or not effective?
14. What gaps do you recognize in regulatory instruments governing seafarers' wellness?

Part 4 – Recognition and reasons of adjustment of work and rest hours

Record-keeping of hours

15. Do you monitor hours of work and rest from your crew?
16. How often does the crew send their work/rest hrs records to the company – weekly/monthly?
17. Does the company verify accuracy of records?
18. Are rest hours completed on paper or electronic/software reporting systems onboard?
19. Have you had cases of adjustments in reporting of rest/work hours by crew?

Part 4 – Recognition of lack of manning and increased workload

Wellbeing and hours of work

1. What is the role of hours of rest in wellbeing?
2. Have you ever had any comment or report (e.g., phone call, email, safety committee, etc.) from crewmember about workload or manning on your ships?
3. If yes, how did you address the issue?

Part 5 - Policy and training on wellbeing

Company policy and training

4. Does the company have any policy on how to deal with seafarers' wellness in general?
5. Is this policy integrated into your Safety Management System?
6. Does the company provide guidelines/information on the effect of wellness on safety?
7. What support is available in case of exceptional/unusual workload *onboard (i.e. engine maintenance/paintwork etc. not part of vessel DD)*
8. Have crew been trained on how to mitigate fatigue?
9. Have crew been trained on how to accurately report their hours of work/rest?
10. Have crew been trained on how to plan onboard activities to ensure compliance with current legal requirements for hours of work/rest?

Part 6 – Recommendations

Recommendations

11. What would be the best solutions/options to enhance wellbeing at sea?
12. Have discussions about this fatigue and workload in your organization involved ship crew? (Master, officers and ratings)?
13. Do you have any suggestions of how the industry can better promote well-being?

Verified on 05 May 2020 by Raphael Baumlér



Appendix 3: Ethics considerations

Appendix 3.1: WMU Research Ethics Committee Protocol

WMU WORLD MARITIME UNIVERSITY

WMU Research Ethics Committee Protocol

Name of principal researcher:	<u>Badri Tetemadze</u>
Name(s) of any co-researcher(s):	<u>Yvette De Klerk</u>
If applicable, for which degree is each researcher registered?	<u>Researches are registered for developing a dissertation in partial fulfilment of the requirements for MSc degree at WMU, Malmo SE</u>
Name of supervisor, if any:	<u>Associate Professor Dr. Raphael Baumlér</u>
Title of project:	<u>Evaluation of seafarers' fatigue and well being at sea</u>
Is the research funded externally?	<u>No, but linked with the ITF seafarers' trust</u>
If so, by which agency?	<u>N/A</u>
Where will the research be carried out?	<u>Malmo, Sweden; London, The UK; Batumi, Georgia</u>
How will the participants be recruited?	<u>Participants will be interviewed</u>
How many participants will take part?	<u>Expected 15</u>
Will they be paid?	<u>No.</u>
If so, please supply details:	<u>N/A</u>
How will the research data be collected (by interview, by questionnaires, etc.)?	<u>Recorded / Transcript</u>
How will the research data be stored?	<u>Research data will be stored in my personal laptop and hard disc with strong password</u>
How and when will the research data be disposed of?	<u>the data will be deleted from my laptop upon completion of my MSc studies, degree scheduled to be awarded 1 November 2020</u>
Is a risk assessment necessary? If so, please attach	<u>No</u>

Signature(s) of Researcher(s): Badri Tetemadze Date: 11.12.19

Signature of Supervisor: Dr. Raphael Baumlér Date: 11.12.19

Please attach:

- A copy of the research proposal
- A copy of any risk assessment
- A copy of the consent form to be given to participants
- A copy of the information sheet to be given to participants
- A copy of any item used to recruit participants

WMU Research Ethics Committee Protocol

Name of principal researcher:	<u>Badri Tetemadze</u>
Name(s) of any co-researcher(s):	<u>n/a</u>
If applicable, for which degree is each researcher registered?	<u>Researcher is registered for developing a dissertation for partial fulfillment of the requirements of the MSc degree at WMU</u>
Name of supervisor, if any:	<u>Associate Professor Dr. Raphael Baumler</u>
Title of project:	<u>Seafarers' wellness and governing regulatory instruments at sea</u>
Is the research funded externally?	<u>No</u>
If so, by which agency?	<u>N/A</u>
Where will the research be carried out?	<u>Worldwide, through online Zoom or Skype meetings</u>
How will the participants be recruited?	<u>Participants will be interviewed</u>
How many participants will take part?	<u>Expected 5</u>
Will they be paid?	<u>No</u>
If so, please supply details:	<u>N/A</u>
How will the research data be collected (by interview, by questionnaires, etc.)?	<u>Recorded / Transcript</u>
How will the research data be stored?	<u>Confidential</u>
How and when will the research data be disposed of?	<u>Archived on a virtual hard drive at WMU at the end of related project / work</u>
Is a risk assessment necessary? If so, please attach	<u>No</u>

Signature(s) of Researcher(s): Badri Tetemadze

Date: 05/05/2020

Signature of Supervisor: Dr. Raphael Baumler

Date: 05/05/2020

Please attach:

- A copy of the research proposal
- A copy of any risk assessment
- A copy of the consent form to be given to participants
- A copy of the information sheet to be given to participants
- A copy of any item used to recruit participants

Appendix 3.2: Interview consent form



Interview Consent Form

Research topic:

A synopsis of the seafarers' wellbeing. A qualitative research based on data from seafarers and maritime stakeholders.

Date of interview:

Expected duration:

Name of participant:

Name of researcher:

Dear Ms/Mr.

Thank you for agreeing to participate in this interview, which is being carried out in connection with a research project dealing with the assessment of seafarers' wellness and governing regulatory instruments at sea.

This consent form intends to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

- Your interview will be recorded, and notes will be taken during the meeting.
- From the interview, there will be a transcript of main points retained by the researcher.
- The transcript will be sent to you to provide you with the opportunity to correct any factual errors.
- The transcript will be analyzed by the researcher to support the investigation.
- Access to the transcript will be limited to researchers and academics involved in the research.
- The information provided will be used for research purposes only and will form part of research reports or/and academic papers as well as eventually in presentations.
- All discussions and conclusions arising from the research will be presented in the aggregate and reference will only be made to individual comments when full anonymity is ensured.
- You are free to refrain from answering any question or withdraw from the interview at any time.
- After the interview and prior to the finalization of the research work, your personal data will be immediately deleted on your request.
- Anonymized research data will be archived on a secure World Maritime University depository/drive. All the data will be deleted after completion of the research.

Your participation in the interview is highly appreciated.

Researcher's name
Designation
Email address

* * *

Quotation agreement

I consent to my interview, as outlined above, being used for this study. I understand that all personal data relating to participants is held and processed in the strictest confidence.

I also understand that my words may be quoted directly, albeit with anonymous attribution. Pursuant to this the researchers may publish documents that contain quotations by me.

By signing this agreement, I agree that:

1. I am voluntarily participating in this research project and I can stop the interview at any time.
2. The transcribed interview or extracts from it may be used as described above.
3. I have read the Information Sheet.
4. I can request a copy of the transcript of my interview and may make edits;
5. I am free to ask any questions I wish prior to, during and after the interview.

Name:

Signature:

Date:

Contact Information

This research has been approved under WMU Research Ethics Committee protocols. For additional questions or concerns, please contact:

Researcher's name
Designation
Email address

You can also contact research project supervisor

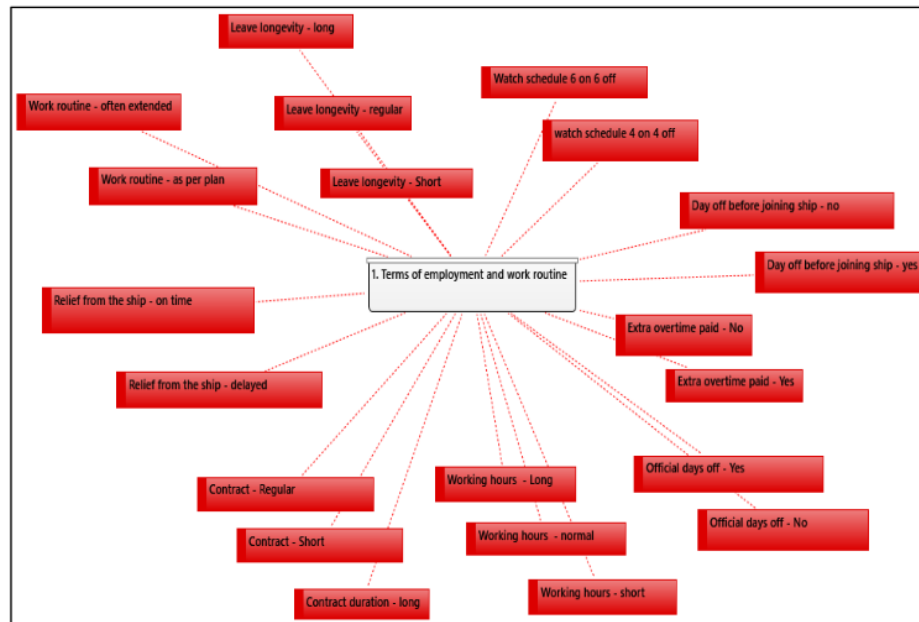
Supervisor's name
Position

Email address

Appendix 4: Nodes assigned to the group 'Terms of employment and work routine'.

Figure 17

Terms of employment and work routine – associated nodes⁴⁷

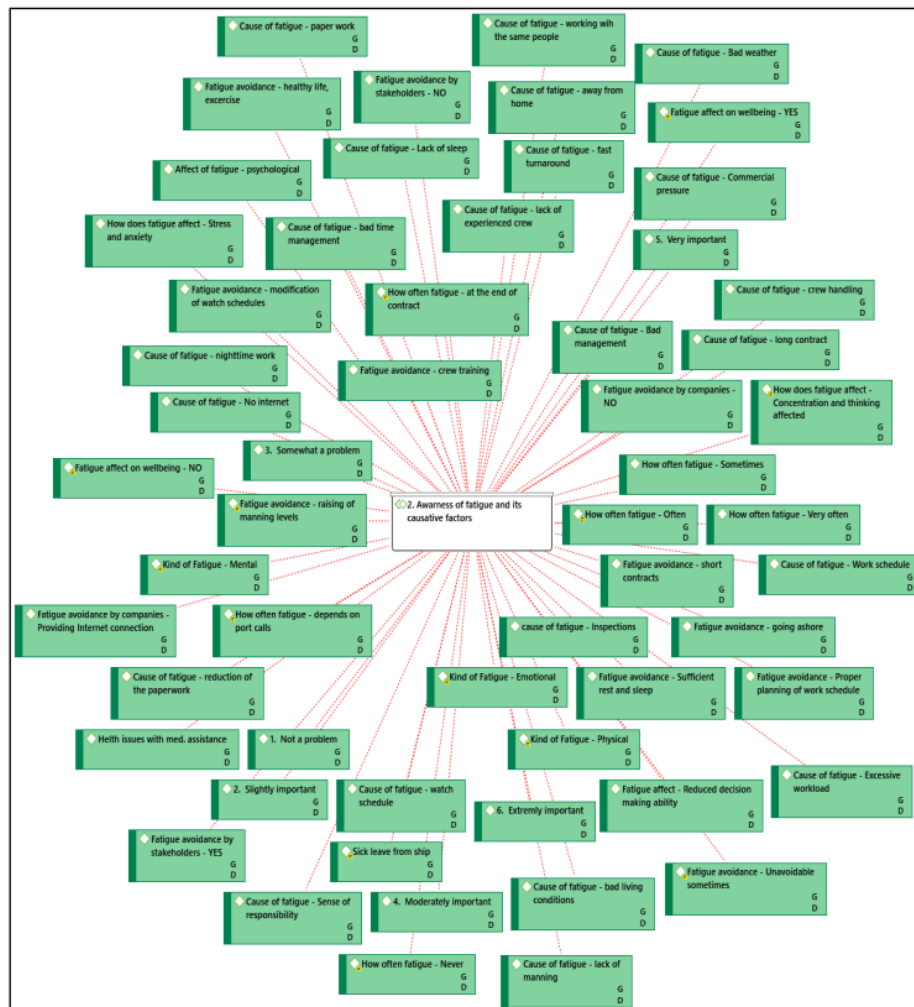


⁴⁷ Source: The researcher, exported from ATLAS.TI using orthogonal tree layout with straight routing.

Appendix 5: Nodes assigned to the group 'Awareness of fatigue and its causative factors'.

Figure 18

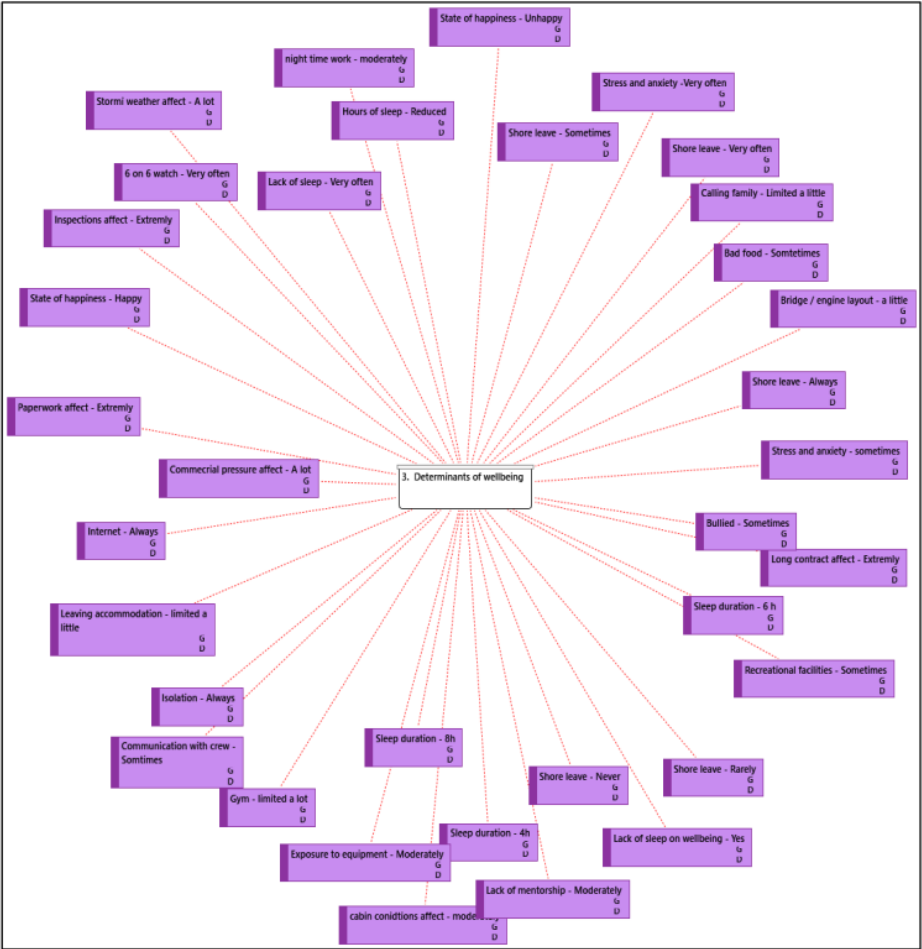
Awareness of fatigue and its causative factors – associated nodes



Appendix 6: Nodes assigned to the group 'Determinants of wellbeing'.

Figure 19

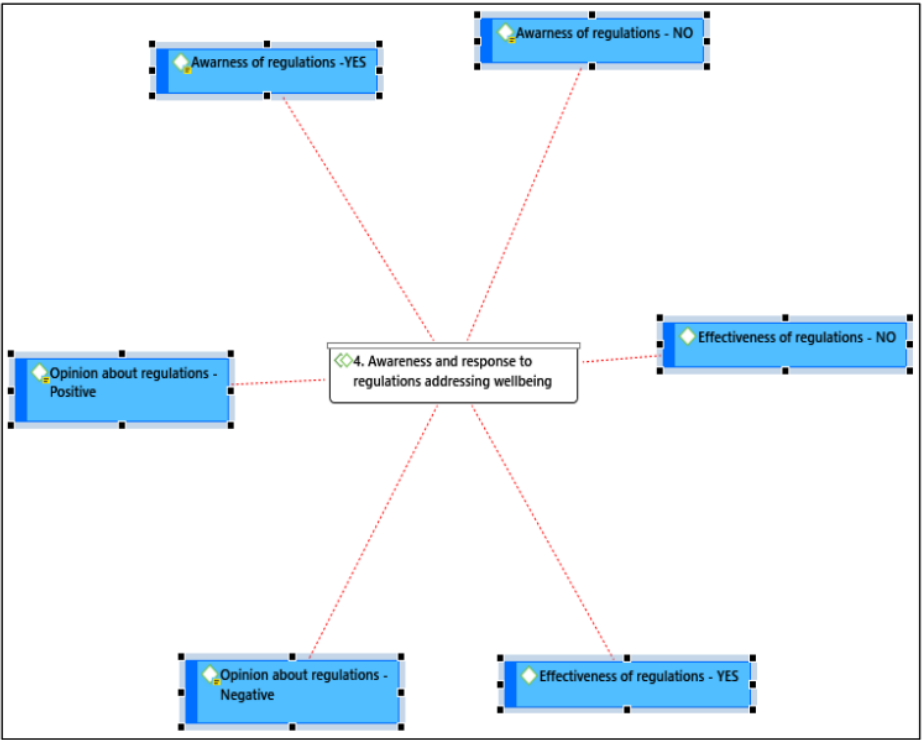
Determinants of wellbeing – associated nodes



Appendix 7: Nodes assigned to the group 'Awareness and response to regulations addressing wellbeing'.

Figure 20

Awareness and response to regulations addressing wellbeing – associated nodes



Appendix 8: Nodes assigned to the group 'Practice of adjustments of work and rest hours'.

Figure 21

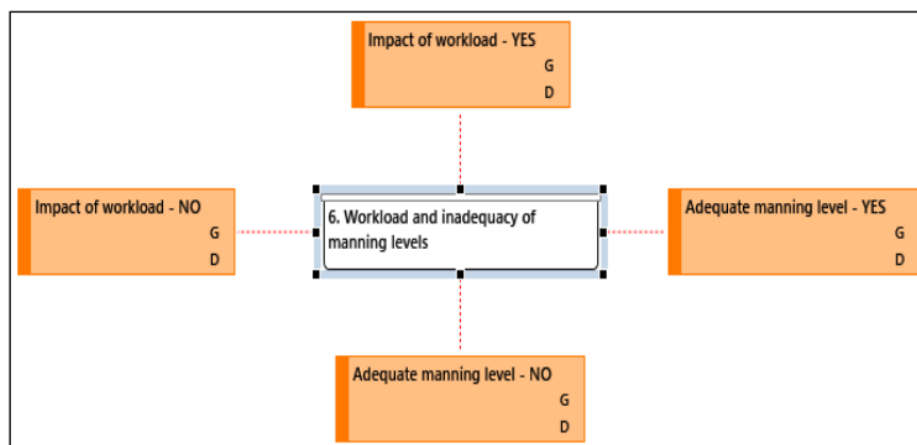
Practice of adjustments of work and rest hours – associated nodes



Appendix 9: Nodes assigned to the group 'Workload and inadequacy of manning levels.'

Figure 22

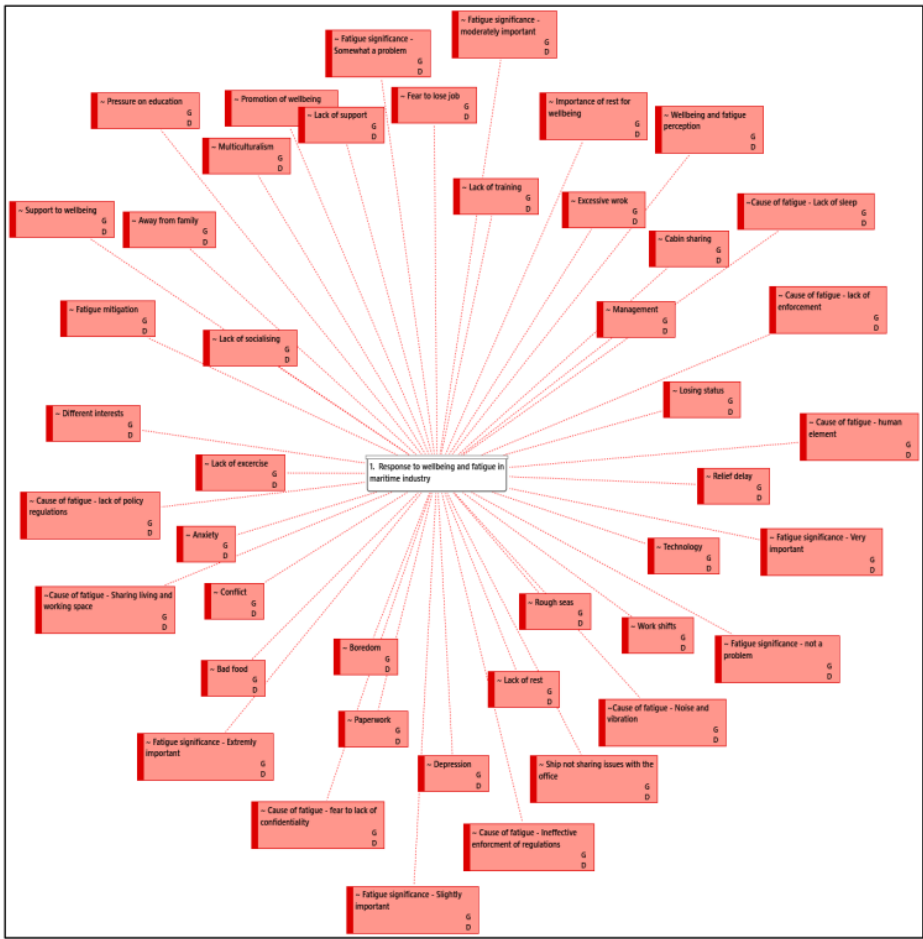
Workload and inadequacy of manning levels – associated nodes



Appendix 10: Nodes assigned to the group 'Response to fatigue and wellbeing in maritime industry'.

Figure 23

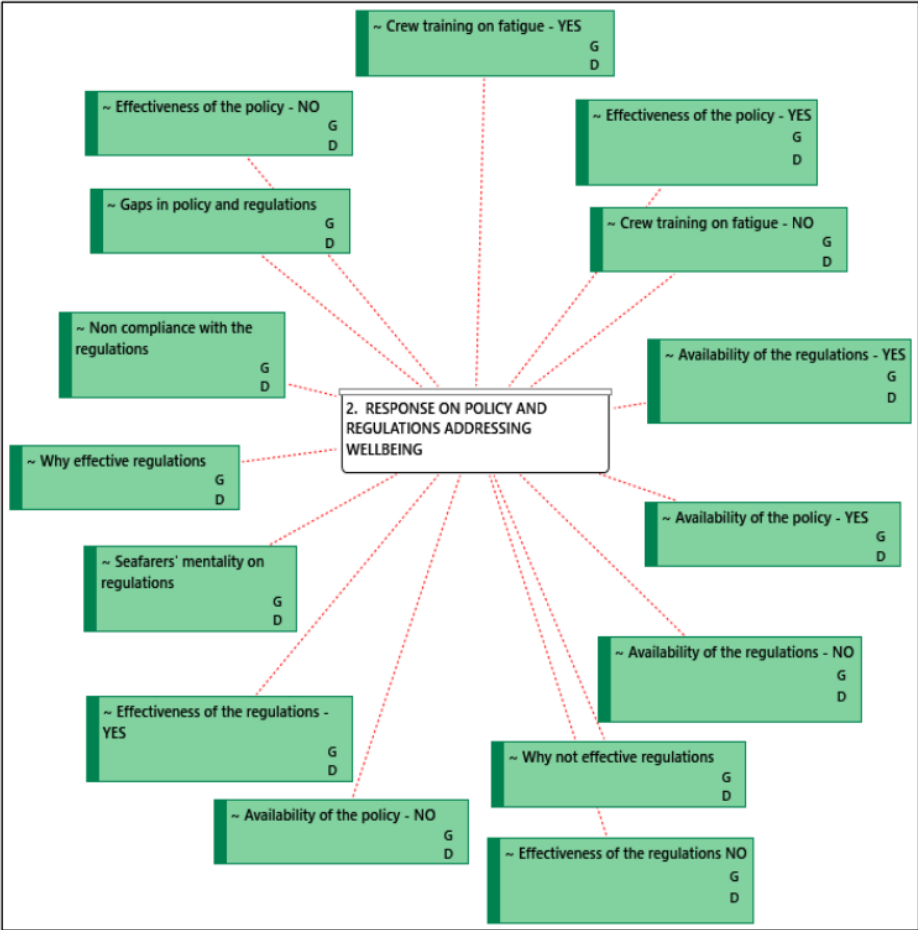
Response to fatigue and wellbeing in maritime industry – associated nodes



Appendix 11: Nodes assigned to the group 'Response on policy and regulations addressing wellbeing'.

Figure 24

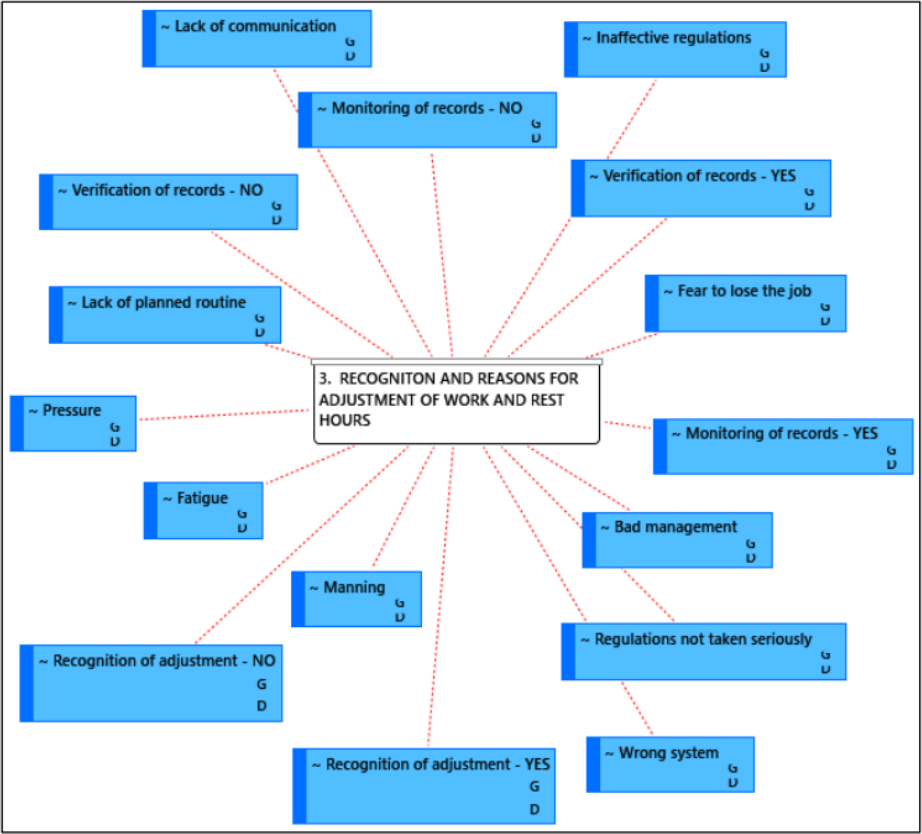
Response on policy and regulations addressing wellbeing – associated nodes



Appendix 12: Nodes assigned to the group 'Recognition and reasons for adjustment'.

Figure 25

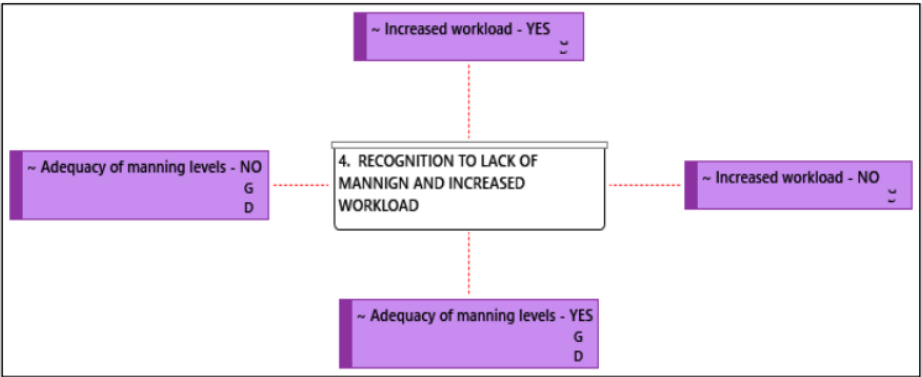
Recognition and reasons for adjustment – associated nodes



Appendix 13: Nodes assigned to the group 'Recognition to lack of manning and increased workload'.

Figure 26

Recognition to lack of manning and increased workload – associated nodes



Appendix 14: Nodes assigned to the group 'Recommendations on further improvement'.

Figure 27

Recommendations on further improvement – associated nodes

